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AUTHOR	POOL, ITHIEL DE SOLA; ANGELL, GEORGE W., JR.
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ABSTRACT

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY, A 4-YEAR PROJECT WAS UNDERTAKEN TO RESTRUCTURE THE SOPHOMORE ELECTIVE COURSE IN SOCIAL SCIENCE FOR NATURAL SCIENCE AND ENGINEERING STUDENTS. THE RESTRUCTURED COURSE EMPHASIZED AN OBJECTIVE, RIGOROUS, AND EXACT APPROACH TO SOCIAL PHENOMENA. READINGS WERE DESIGNED TO CARRY THE STUDENT STEP BY STEP FROM RAW OBSERVATIONS TO CONCLUSIONS AND WERE REINFORCED BY EACH STUDENT'S PARTICIPATION IN SOCIAL SCIENCE RESEARCH. A FOLLOW-UP STUDY INDICATED THAT STUDENTS ELECTING THE NEW SOCIAL SCIENCE COURSE EXPERIENCED SLIGHTLY GREATER POSITIVE SHIFTS ALONG SEVERAL ATTITUDINAL DIMENSIONS THAN DID STUDENTS IN A HISTORY COURSE. (APPENDICES INCLUDE STATISTICAL TABLES ON THE PROJECT, THE COURSE OUTLINE WITH READING LISTS, AND A REPORT ON CRISISCOM--A COMPUTER SIMULATION OF INFORMATION PROCESSING BY DECISION MAKERS IN WHICH THE MIT SOPHOMORE SOCIAL SCIENCE STUDENTS REPLACED NATIONAL DECISION MAKERS.) NOT AVAILABLE IN HARD COPY DUE TO MARGINAL LEGIBILITY OF ORIGINAL DOCUMENT. (LH)

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Final Report

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The Development of a Basic Social Science Course for Undergraduate Students in the Natural Sciences and Engineering

Ithiel de Sola Pool
George W. Angell, Jr.

Massachusetts Institute of Technology

Cambridge, Massachusetts

October 15, 1969

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Summary

This project has attempted to develop a course in social science for students whose professional careers will be in natural science and engineering. Feedback from both staff and students has been utilized in continual modification and improvement over the four years of the contract. Research has been done on the type of student who elects social science rather than history (students must take one or the other) and on attitudinal changes which take place over both long and short term. Emphasis in the course has been demonstrate that one can be objective, rigorous and exact in considering social phenomena. The course readings carry the student step by step from raw observations to conclusions rather than presenting him with predigested conclusions in the form of essays. This has been reinforced by providing each student an opportunity to participate in a piece of social science research. Thus, each student has been forced to hypothesize about some social or psychological problem, to collect the relevant data and to test his hypotheses against fact. Research results indicate that students opting for the social science course differ only slightly from those who take the history option. In the short run the social science students appear to experience slightly greater positive shift along several attitudinal dimensions than do the students opting for the history course.

The objectives of the course appear to have been met. Teaching was evaluated by observers and by a computer simulation model. Lectures proved the least effective part of the course. Questions in the syllabus proved to be very useful. Appropriate readings were identified. There is a felt need for better motion pictures.

Foreword

The explosion of science in our generation is bound to have a profound effect upon the entire structure of American education. The most rapidly growing sector of the occupational distribution are technologists. There is reason to believe that within the next forty or fifty years, the characteristic curriculum of an educated man will have to become more like that of a science or engineering major today than like that of today's liberal arts major. Specifically, one can expect that by the end of the century, forty to sixty per cent of a normal curriculum may be scientific and technological. If this expectation proves true, then schools like M.I.T. which are developing a technical curriculum but at the same time making it a comprehensive one including a broad-based foundation in humanities and social sciences, may be instituting the design of education for the American future. Those of us who teach social sciences at M.I.T., therefore, approach the problem of providing a proper social science element in the M.I.T. curriculum as an experiment perhaps relevant to the entire future of American education, and certainly relevant to that increasing number of young people who will be trained as technologists. They, too, need to understand the society of which they are a part.

Technically trained people are playing an ever more important part in the decision-making processes in both government and industry. The science advisor is a new and powerful role, and one that cannot be confined to matters of science narrowly conceived. The science advisor involved in decisions on foreign policy, defense planning, industrial development, and similar fields, is concerned with crucial issues that are not merely technological. They involve a high admixture of social purposes and consequences.

This is but an extreme instance of the ever increasing scientific and social expertise. The separation of these specialties into different men's heads cannot work completely. Integrated planning requires integrated education. Technologists who are going to be policy makers need a background in the social sciences.

Indeed, it is a well known fact that the majority of able men trained as engineers wind up their careers in policy making fields rather than in engineering as such. This has been a large part of the rationale for the excellent humanities program at M.I.T. It is also our rationale for improving the program in the area of the social sciences.

In summary, we at M.I.T. believe that we are developing a prototype for a large part of the American education of the future. Our aim has been -- and is--to develop an appropriate social science element in this curriculum. We believe this effort to be of national relevance.

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Background of the Project

When Columbia University developed its Contemporary Civilization course, it set a pattern that numerous American colleges and universities have followed ever since: the pattern of interdisciplinary general education courses in the social sciences intended for students whose professional committments are in other directions. Syllabi and testbooks arising from many such courses are available. Among the most impressive are those from the University of Chicago, which followed Columbia's lead in the 1930's.

Such general social science offerings are not necessarily 'survey" courses. One issue has been that between the survey and the sample-slice-in-depth. The Harvard Curriculum provides examples of the latter approach with a number of general education social science options available to Freshmen and Sophomores, each designed not as an introduction to a discipline, but as a sample of social science thinking.

Among the dozens of such general social science introductory courses, some are heavily oriented to social problems while others take a more disciplinary approach. But in one way or another, they must all meet certain difficulties as well as opportunities inherent in that kind of education. The difficulties include those of maintaining the interest, quality, and cooperativeness of an interdisciplinary staff. It is not easy to so organized the division of labor that a group of specialists can best use their talents while also teaching across a broad range of problems on which each of them cannot possibly be an expert.

Despite these problems--and we are deeply aware of them--the interdisciplinary general education format is so clearly relevant to introducing the non-specialized beginning student to an understanding of the society in which he lives that such courses have continued to gain acceptance and will undoubtedly do so further. They have a special appeal where the student will never again be exposed to the social sciences and where, therefore, the standard pre-professional disciplinary course is largely inappropriate. The advantages of the general education approach, and also its problems, become particularly apparent as one attempts to devise an appropriate education for scientists and engineers. We have addressed ourselves to the problem of how to make these men more aware of the social milieu in which they will work and live. Efforts to develop courses for this purpose have also been made at the Illinois Institute of Technology, Carneigie Mellon University, California Institute of Technology, Chase Institute and Purdue, among other engineering schools. These programs have met with varying degrees of success. None has reached the point of becoming an exciting prototype such as the Columbia and Chicago models in the liberal arts field.

MIT's own history has been characteristic. Two decades ago we had a freshman social science offering starting with cultural anthropological material and oriented especially toward social and political organization. It did not differ in any notable respect from similar courses in liberal arts institutions. With faculty changes and no stable faculty base, it soon lost steam. After a short period, it was dropped and the only social science that remained was what was integrated into the humanistic offerings in the history of Western civilization. For the first couple of years, that course dealt with social history along with literature, philosophy, etc. However, the social science element, never clear in its functions, rapidly got squeezed out and by the end of the 1950's there was an excellent program in humanities in MIT's freshman year, but without any social science. Two years prior to the inception of this project, an attempt was made to re-introduce a social science element for undergraduates, this time in the sophomore year. Our students were given an option between a second humanities sequence and an historical - social science sequence. The social science course was immediately opted for by more students than we could allow into it. At that time, what was offered was a course in no way different from one that might be offered at any liberal arts institution. With no derogation to the quality of the course, it is fair to say that it did not really tap the opportunities presented by the situation at MIT.

The intent of our project was to build upon the social science course described above but to make major alterations so as to utilize the extraordinary social science talent which has been assembled over the past decade at MIT. Probably never before has a scientific and technological institution assembled an equal collection of the social scientific skill. In both economics and political science, the Institute department is generally conceded to be a top one in the country. Economics is both older and larger. Psychology is also strong. The Center for International Studies is one of the most active organization in the country in research on the developing nations on foreign policy matters. At the time when this program was undertaken, the political science PH.D. program had grown to a point where we had 70 doctoral candidates and a faculty of about 20. In short, MIT has become one of the major centers of social science in the United States. Prior to undertaking this project, the burgeoning growth of research and graduate education in the social sciences, kept the focus of MIT's social science faculty somewhat away from general education. The point should not be overstated. Many of our senior people taught general education courses for juniors and seniors and several hundred such students each year opted for social science sequences to meet their upper class general education requirement. In addition, a few of the junior faculty taught in the Sophomore course referred to above. At the same time, it is fair to say that most of our senior faculty's efforts and interests had been fully absorbed in the rapid growth at the more advanced level.

However, by 1962 our graduate and advanced undergraduate work was on a firm foundation and it came as a sudden realization that we were starting too late and missing an important stage in our students' education. There emerged in our faculty a remarkably surge of interest in doing something appropriate to science, novel, and original in beginning social science education. A canvass of our political science section revealed that every single one of our full professors was more than willing to devote some part of his teaching time to a sophomore-level general social science course. With such indication of widespread support, a proposal was submitted to HEW - a proposal which was accepted and eventuated toward the end of 1963, the outcomes of which are the focus of this report.

Purposes of the New Sophomore Course

The primary objective of the new course was stated in our proposal:

> The problem to which we address ourselves is that of providing general education in the social sciences to students whose professional careers will be in natural science and engineering.

More specifically, we listed as objectives:

i. Providing future scientists with an understanding of the social environment in which they will be working.

ii. Providing future citizens with an understanding of the social environment in which they will be living.

iii. Conveying an awareness of the possibility of taking an objective factual approach to social phenomena.

iv. Conveying an understanding of the experimental, mathematical model, and field research methods used by social scientists to obtain and analyze empirical information.

v. Giving the students an opportunity to become familiar with part of our heritage of masterpieces of social analysis.

vi. To give the student exercise in the process of bringing rigorous research to bear in the analysis of public policy issues.

vii. Ascertaining by experiment what types of social science content and what modes of presentation are most effective with science and engineering students.

viii. To conduct research on pedagogical methods in the social sciences.

The broad schedule for the project was also stated in our proposal:

> The academic year 1964-65 will be an experimental year...the faculty who are teaching the course will devote a substantial period during the year to discussion and development of revised and improved teaching materials.
>
> The year 1965-66 will be devoted to a full-fledged presentation of the course. It will be the members of that class who will be most intensively studied in the before, during and after design outlined above.
>
> The year 1966-67 will be devoted to revision of the course, to the production of materials in semi-permanent form in which they will be available outside M.I.T. and to continuing study of the previous classes' experience in their junior year.
>
> The year 1967-68 will be devoted as far as this project is concerned solely to follow-up of the class being intensively studied in their senior year.

The Role of the New Course in the Curriculum

To appreciate the reasons for some of the specific means we adopted to achieve the goals just enumerated, it is necessary to understand somewhat more about the particular context in which the sophomore course fit in the M.I.T. curriculum as it existed in 1964.

Students who come to M.I.T. with rare exceptions intend to go into Science or Engineering. It is possible to get a bachelor's degree at M.I.T. in Political Science, Economics, History, Literature or Philosophy, however, practically no students come to M.I.T. with those objectives in mind. They know that if they come to the Institute they will have to take much Math and Physics (in 1964 it was two years of Math, a year of Physics and a semester of Chemistry). They visualize the Institute as primarily a technological Institution. Furthermore, selection for admission is based heavily upon a prediction formula in which the key variables are those that predict high grades in the freshman year, i.e., largely Math and Physics.

However, a substantial proportion of students who enter M.I.T. or other technological institutions discover in the course of their four years that their interests lie in a different direction. Indeed, in an earlier study of the M.I.T. freshman class, by Leila Sussman, it was established that the main source of malaise at that time was that young men came to M.I.T. very largely because they had shown a mechanical bent in high school and their advisors had told them they were born scientists. When they got here, however, they discovered that tinkering with cars was not the same thing as the abstract science that was being thrown at them. Many of them began to wonder whether they had opted for what they really liked.

At M.I.T. Industrial Management, the Social Sciences, and the Humanities have provided an escape hatch for these students who would otherwise have had to transfer out of the Institute. In recent years about 15% of our undergraduates have taken their degrees outside of Science and Engineering. That, however, is not the only or even the most important purpose of the Humanities and Social Sciences at the Institute. Their most important role in the undergraduate curriculum has been that of general education for the 85% who continue to get their degrees in Science and Engineering. The basic requirement in Humanities (including Social Science for this purpose) is a course in each of the eight semesters that the student is enrolled for his degree, i.e., approximately 1/5 of his education. In 1964 in the freshman year the course was a required Humanities offering covering classical literature and philosophy that has been described above. The evolution of options in the sophomore year has also been described in an earlier section. The specific requirement since 1964 has been that the student take one semester of either Literature or Philosophy and one semester of either History or Social Science. In the last two years the student may choose broadly from among the full range of offerings in the humanities and social sciences, subject only (in 1964) to his concentrating at least three of the four courses in some broad area.

The new course that we offered, allowing the student an alternative to History in one semester of his sophomore year, thus might or might not be his only exposure to social science. By opting for History in the sophomore year and by opting for a subject like Graphic Arts in his junior and senior years, he might indeed virtually evade all social science, except insofar as the History course is also heavily embued with social scientific ideas. On the other hand, even if he did not take the social science option in the sophomore year, he might end up with four courses in Economics and Political Science in his junior and senior years. Many combinations are thus possible.

For the present research effort this is indeed, a disadvantage. We had no clean way of comparing effects on an experimental and a control group have not been exposed to rigorous and excellent social science teaching. Nor can one assume that the experimental group who took the new course that we offered were exposed to it alone.

These variations should be kept in mind as one reads this report. Nonetheless, one can visualize two broad patterns on the one hand, students who manifested enough interest in the problems of contemporary society to voluntarily opt for a social science offering in their sophomore year instead of a History offering, and who might then be expected in their junior and senior years to take at least some of their general education electives in the social sciences. On the other hand, there would be a stream of students who found the contemporary, realistic, pragmatic and intellectually somewhat unimpressive character of the social sciences less attractive than a more detached intellectual exploration into a historical topic (if they had to take anything dealing with society at all) and who would opt for general education courses in areas like Literature, Philosophy, or the Fine Arts. Despite the large number of borderline and mixed cases, there was enough realism to these two options to justify our focusing our evaluation of the new sophomore course on a comparison of students who seemed to be moving into one or another of these streams. We attempted to answer the questions as to which kind of students chose one path or the other, and given that they had chosen the new social science sophomore course, did that have any measurable effect upon them? It was with these two questions and the list of objectives of the course given above that we started our evaluation search.

The Basic Course

In September, 1964 we started teaching the first approximation of the basic course. Our primary purpose was to demonstrate that one can be objective, rigorous, and exact in considering social phenomena. The course readings, specifically selected to implement our main objective, carry the student step by step from raw observations to conclusions rather than presenting him with predigested conclusions in the form of essays. Among the secondary objectives leading to our selection of readings and discussion topics were the following:

1. Stimulation of students' interest by focusing on the individual human being and his interaction with society.
2. Encouragement of student scientists and engineers to recognize that their professional work occurs in a social context.
3. Introduction of students to some of the best, most exciting, and most sophisticated writings in the social sciences.

These secondary objectives led us to focus on two broad, related topics: the first, modernization in the sense of the adoption of new days; the second, a comparison of two models of man: the model of man as a rational maximizer and the model of man as subject to habit, tradition, influence, persuasion, and communication. We started out by asking how far human nature acts as a barrier to the creation of a better society. We then looked more closely at what was known about the psychology of choice, persuasion, and motivation that might affect the prospect of progress.

We made few changes in the course for the spring semester of 1965; major revisions in the reading selections were made during the summer, when three graduate students spent the summer months reviewing readings and developing a comprehensive study guide[1] for use of both students and faculty. Only minor revisions in the readings were made during the rest of the experiment.

The reading are the heart of the course. Teaching, however, was carried out through a number of media and techniques. There were:

Readings
Weekly lectures to the entire class
A weekly 2-hour seminar in small groups
A library research paper
A research experiment
Movies and demonstrations

The lectures were originally instituted to provide some unity to what went on in the different seminars. The seminars were regarded as a far more important learning environment. However, there was a real problem in maintaining unity in the course and that problem was recognized from the beginning. The faculty of course were drawn from a wide variety of disciplines: Political Scientists, Economists, Sociologists, Psychologists, Historians and a few others. None could possibly be an expert on all of the topics covered in the course. Some might have their expertise in a topic that we never touch. It was felt to be important to permit each seminar instructor to bring his own individuality to his teaching. The dilemma was how to introduce common themes into the thinking of all of them and all of their students.

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[1] A sample reading list and study guide is included as Appendix A. A review of it will reveal a few exceptions such as Ruth Bendix's Patterns of Culture. Yet Most of the readings start with data collection, present the data analysis, and end with supported conclusions.

Our original notion was that each week we would have a member of the faculty who was an expert on that week's material (and usually one who was also teaching seminars in the course in that semester) deliver a lecture. By not having one faculty member lecture throughout the semester we sought to avoid making the course any one person's baby and reflective of his idiosyncrasies. By having the lecturers faculty members who were teaching in the course, we hoped to achieve relevance of the lecture to what had gone before. By having the lecturer be an expert, we hoped to achieve depth of analysis and inportance of ideas.

In point of fact, the lectures were the most disappointing part of the initial experience, while the reading list, as noted above, proved itself well enough to remain largely the same throughout the experiment. The lecture schedule, however has been altered substantially since 1965.

Initially, it was our expectation that the lectures and lists of readings would bind the several seminar sections into a single course, accomplishing approximately the same ends for all students. However, the lectures generally tended to restate and further generalize the identical topics towards which the readings were aimed. In an endeavor to make this feature of our program supplemental to, and an expansion of, the material being read by the students and discussed in the seminars, we have continually increased the amount of audio-visual material, demonstrations and utilization of panel discussions for synthesis of the material in the readings.

The Research Paper

Several weeks of the semester are generally devoted to discussion and preparation of a library research paper concerning historical or contemporary attempts to produce large-scale social change by the application of social science principles. Five broad topics, "Problems of Social Change in One or Two Developing Countries," "Life in 'Utopia'", "The Communist 'New Man': Goals and Realities," "Poverty in the United States," have been developed to approach this common theme in entirely different ways. Others may be added. The diversity in approach is designed to make the course more adaptable to the varied interests of the student and of the faculty, too. Various specific term paper subjects are suggested to the students in the guidance memorandum on each topic. Material on the nature of a research paper and how one should be written has been prepared and is given to each student.

The Research Experiment

One of the main features of the basic course is provision of the opportunity for each student to participate in a piece of social science research. Insofar as possible, we have endeavored to select problems which seem likely to be of high interest to students. Our experience in having students do such a piece of original quantitative analysis has been good. Some past research experiments are described below.

1. Election Study (Fall, 1964)

Students were given three brief written assignments. The first assignment required that they (a) draw from their reading and other experience certain social science hypotheses that could be tested in the (then) impending 1964 elections, (b) design a questionnaire and specify other data that would be necessary to test these hypotheses, (c) prescribe in advance what the method of analysis of the data would be. When this assignment was turned in, the course staff drew up, on the abasis of the individual student papers, a single set of hypotheses and a single questionnaire for all the students to use in the subsequent two assignments.

The second assignment required each student to obtain responses to the questionnaire from at least three M.I.T. students and at least one non-student (partisan) respondent, sought out by the students at a political rally. When the second assignment was turned in, the staff tabulated the results of the questionnaire and returned the tabulation to the students for analysis. The students assessed the degree of confirmation of each hypothesis, attempted to explain why some hypotheses were not confirmed (if they were not), and suggested new hypotheses implied by the data but not stated in advance.

2. Data Processing and Interpretation of Student Questionnaires (Spring, 1965).

This research project centered upon the processing and interpretation of data collected by our research staff. Marginal tabulations of questionnaires covering background, motivations, and attitudes of the class itself were given to the students. Students were also given a list of six questions and asked to make a best guess as to the answer of two of these questions, i.e., to evolve two hypotheses, on the basis of the marginal tabulations.

The student's assignment was to determine the data-processing necessary in order to verify or refute- the hypotheses. He could request up to ten cross-tabulations (either two-or three-dimensional) for any of the questionnaire items he wished. Each student punched his own control cards to order his ten tables. The table were returned to the students approximately a week after the date by which they had to submit their control cards.1/

Students then prepared papers analyzing the data provided to them and summarizing their conclusions.

3. Utility Theory and Time Perspectives Study (Fall, 1965)

The staff prepared a questionnaire concerned with determining a person's willingness to delay gratification and his willingness to plan for the longe-range future

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1/ The cross-tabulation program utilized was produced as one outcome of a Research Program on Problems of International Communication and Security at the Center for International Studies, MIT. The research program was sponsored by the Advanced Research Projects Agency of the Department of Defense (ARPA), Contract No. 920F-9717, and was monitored by the Air Force Office of Scientific Research (AFOSR), Contract No. AF 49 (638)-1237. Project MAC, an M.I.T. research program sponsored by the Advanced Research Projects Agency, Department of Defense, under Office of Naval Research Contract NONR-4102(01), made facilities availabe for this experimental operation.

in the face of uncertainty. Students filled out the questionnaire themselves and then administered it to four other MIT students. In addition to collecting these data, the students formed hypotheses as to the outcome of the experiment and devised ways of testing their hypotheses on the basis of the questionnaire results.

At the same time that students turned in their hypotheses, they also submitted control cards requesting the processing of the questionnaire data they felt necessary to test their hypotheses. Upon receiving his cross-tabulations, each student wrote a brief report commenting on whether or not his hypotheses were confirmed, whether any alternative hypotheses were suggested, and the conclusions he drew from the experiment.

4. Study of Relationship between TAT Results and Indi-Characteristics (Spring, 1966)

Since two of the readings assigned in the course involved pieces of research in which the Thematic Apperception Test played a large part, and since McClelland's concept of achievement motivation as measured by the TAT had proven to be of interest to students in the past, our student research problem for the spring semester revolved around the relationship between TAT results and other characteristics of the individual.

Students were given the marginal tabulations obtained from those sophomores who had taken the course the previous semester, since for this group we had available a massive amount of data on a wide variety of variables. Students were asked to hypothesize what particular behaviors, background experiences, or attitudes they felt would tend to go along with high need for affiliation, high need for power, or high need for achievement in much the same manner as their readings indicated that McClelland had used to investigate the effects of achievement motivation in developing societies. Having formulated his hypotheses on the basis of the marginals, the student requested of us certain specific cross-tabulations which he felt would either demonstrate or refute his hypothesis. These cross-tabulations were run and the results returned to the students. Each student then wrote a brief paper on his findings.

5. Study of Inconsistencies in Voting Behavior (Fall, 1966)

This experiment involved analysis of data collected in voter interviews in three Boston precincts. The staff selected three precincts showing inconsistencies in voting patterns for school-committeemen and attorney general in the 1963, 1964 and 1965 elections. Students were given census data regarding these precincts and several possible hypotheses to explain the voting behavior. They were asked to supply additional hypotheses and possible questionnaire items which would test these hypotheses. A uniform questionnaire for all students was drawn up by the staff, utilizing the questions submitted by students. Students were then given interviewing instructions and assigned to interview a random sample of registered voters from the three precincts. The data collected were tabulated by the staff and returned to the students, who then wrote short papers based on the data to explain voting behavior in their seminar's precinct.

6. Interview Survey of MIT Students' Attitudes and Values (Spring, 1967)

During the spring semester the staff designed an interview protocol aimed at obtaining information from all members of the present MIT Junior class about such variables as friendship choices of students, their family backgrounds, career and educational plans, religious affiliations and activities, social activities and attitudes toward several current and controversial public issues. Students were given basic instruction in interviewing methodology and assigned three or four juniors to interview. After completing his interviews, each student then developed hypotheses based on the interrelationships among the questionnaire variables. At the same time, he submitted requests for data processing required in order to substantiate or refute his hypotheses. The staff completed the requested processing and printed results were returned to the students, who then prepared brief papers giving their conclusions as to whether and in what way the data supported or refuted their hypotheses.

7. Experiment in Social Pressure (Fall, 1967)

During the fall semester students participated, in small groups, in an adaptation of the Asch experiments on opinion and social pressure, which they read about in the course. Instead of judgment about the nature of a physical stimulus (the length of a line), a naive subject's statement of his position on a political stimulus--the admission of Communist China to the UN - was the dependent variable. His position was communicated by the student experiment leader to the "Confederates" (all of whom were course students). There followed a ten minute discussion during which the confederates argued for the position opposite to that of the naive subject. Then all participants noted their position on the question again, this time orally, the confederates taking the opposite position from the naive subject's original position. The data from the experiments were tabulated and students then wrote short papers on the results. The results were that 24% of the naive Harvard subjects and 36% of the naive MIT subjects changed their (stated) position in the direction of the confederates' stand. The project was successful in getting the students interested and involved.

8. Study of MIT Students' Political Attitudes and Behaviors (Spring, 1968)

During the spring semester, the students participated in a survey of political attitudes and behavior of the MIT undergraduate student population, with emphasis on attitudes and behavior relevant to the 1968 Presidential campaign. Each student interviewed four MIT undergraduates. After the data were collected, each student formulated hypotheses which he then tested on the tabulated survey data.

Teaching Staff

A noteworthy feature of the course has been the extensive participation of senior faculty members as discussion section leaders. Almost every semester, more than half of the teaching staff has consisted of men of professorial rank. Nearly all senior faculty members have participated at least once and some as many as four semesters in our four years of operations. This has probably contributed in no small way to the increasing popularity of the course among students.

The Second Semester Course

In the MIT curriculum, each sophomore is required to take a so-called "humanities" course each semester. In one of these semesters, the course must be either history or in social science. (Our basic course meets this requirement for the social sciences). In the other semester it must be either in literature or philosophy. No student is required to take any social science; he can avoid it if he prefers a historical course. It also follows that students are not generally free to take more than one semester of social science in their sophomore year. Unless a student has received advanced standing in some of his professional or scientific courses or wishes to take an overload, there is no way for him to fit in a second semester of social science. Nevertheless, we felt it worthwile to develop a second semester course to enable those few students who develop an intense interest in the subject matter of the social sciences and who can make room for such a course to continue with what they have started in the basic course and lay a foundation for what for such students will undoubtedly be a continuing program of social science study either as a major or as a minor.

However, because of the structure of the MIT undergraduate curriculum, registration in the second semester course was so small that we have to treat our work on this course as part of our experiment for the Office of Education rather than as a serious component of the MIT curriculum. The small group of students who could and did enroll obviously consisted of ones with high motivation and strong interest in the social sciences.

In contrast to the basic course, the second semester course was designed as an introduction to a professional approach to research. Its major educational objectives were (a) to introduce the students to the major theoretical notions concerning social systems and (b) to acquaint the students--both through contact with the reported research of professionals and through their own research efforts--with the kinds of detailed research tasks that connect these (and other) theoretical notions and the empirical world. Whereas the basic course focused on the individual in relationship to society--a topic that absorbs sophomores just becoming adults in their own right--the second semester focuses on the structure and operation of social systems, a topic likely to interest that minority of persons with an aroused interest in social science.

Each time it has been offered, a major portion of the second semester course has been a group research project on some major policy problem involving systems analysis. The problem selected has to involve prediction of large-scale social effects and has to involve public policy decisions having costs and benefits. Examples are air pollution, weapon system choices, development plans. One year, for instance, the project choses was: "Social Factors Related to the Possible Development of High-Speed Ground Transport System in the Northeast Corridor."

There were two major reasons for our choosing the particular research topic cited. First, we wanted a real policy issue in a modern society, preferably the students' own, and one that involved a large number of interacting factors about which a sizeable corpus of data of varying quality and comprehensiveness existed. Secondly, the current presence at MIT of a large faculty research project devoted to the technological and social factors involved in possible high-speed ground transport systems gave this topic the advantages of (a) ready availability of source material, (b) a degree of control on the engineering aspects of the system the students were to study from the social point of view, and (c) availability to the students of expert faculty and graduate student advice.

The group was organized as a research team and the problem was set in the following terms:

> You are a social science research team. You have been commissioned to study the social factors affecting the feasibility of a possible high-speed ground transport system in the Northeast corridor and the social effects such a system may have. You are to take the following tech-

nological specifications regarding possible routes, speeds, schedules, carrying capacities, etc., that have been furnished by the engineering team, as given...Your task is to decide (a) whether to recommend to your sponsor that some form of high-speed ground transport system is preferable to any other transportation or communication alternative and (b) if so, which of the technologically feasible alternatives you recommend and why. You are to interpret "social" factors in the broadest possible sense, including such things as relative cost, financing, potential revenue, political feasibilitv, optimal charter and administration of the system, personal attitudes affecting the feasibility or use of the system or being affected by it, predicted population size and composition, possible effects of the system on the nature of communities in the area and/or their location, projected natural growth or stimulated growth of alternative transportation and communication modes, etc.

Your first step must be to decide among yourselves on some reasonable division of labor. After you have broken the job down into as many sub-jobs of approximately equal size as there are members in the group, each man will start to work on his own subtopic. It will soon become apparent that the subtopics are not independent, but rather highly interrelated. Consequently, each man will be able to proceed in his own work only by continual consultation with the person(s) responsible for other subtopics that contain factors directly influencing the ones for which he is primarily responsible. You will thus find yourselves forced to work together, the team as a whole making roughly simultaneous progress on all fronts. The end product of your work will be a group report, giving a balanced policy recommendation based on the most judicious possible evaluation of all major relevant factors.

Inter-student discussions both in and out of class did, in fact, generate something of the air of a team research project. The student's final written paper on his subtopic, his oral presentation, and his contribution to class discussion of other students' subtopics were all considered parts of his performance on the special research topic.

Conference and Dissemination

From the beginning we were conscious that one purpose of the project was to do something that might have an effect on American education more broadly than M.I.T. The curriculum development undertaken under the Office of Education grant has produced a permanent change in the M.I.T. curriculum. The Introductory Social Science Course that we are here describing has become a permanent part of the curriculum, though it is of course constantly evolving, Nonetheless, M.I.T. is a very special institution and the grant effort can be justified only to the extent that it is not completely unique.

Our target audience is not all educational institutions. There are already many good general introductory social science courses for liberal arts institutions. Our target audience is clearly technical schools or technical departments. Furthermore, M.I.T. differs from most of them in that we can assume a much higher average level of scholastic aptitude than one will find in most situations. The readings used in our course did not differ markedly from ones that might be assigned in a graduate course. No textbooks were used.

Yet what we have done is by no means of uniquely local relevance. The readings we used are also ones that will be found widely in beginning and other undergraduate social science courses. The problems that we dealth with are also ones of common interest. The experience is not irrelevant to other institutions.

To diffuse that experience we have relied primarily on two methods of communication. We have distributed the syllabus and teaching materials of the course widely to all who have requested them and to others on our own initiative. Also, at the point that the course had reached its canonical form and our experience seemed riped, we organized a conference to exchange our experience with those of others in a similar situation.

In March, 1966 the Political Science Department of MIT held a conference on undergraduate education in the social sciences to which were invited faculty members from a large number of political science departments throughout the eastern section of the United States. One major topic of the conference was the beginning social science course with much of the discussion centering on the MIT course as a model. In addition to our staff, discussants included such people as Harold Lasswell, Eugene Lichtenstein and David Bell, to mention only a few.

The second conference session was devoted to consideration of available teaching aids--especially audio-visula aids--of use in undergraduate social science education. One particular need pointed out by several discussants was for a film illustrating the problems and methods of survey research and the techniques of interviewing. Partly as a result of the conference, such a film was commissioned by the Human Factors in Modernization Project.1/ The film, entitled "Interview," was intended to serve both as a teaching aid for undergraduate social science courses and as a prototype interviewer training film which could be used as a model for similar films for training interviewers in different cultural contexts.

The reason for the focus on film was that we had identified motion picture materials as the most serious lack for the development of a course such as ours.

1/ The Human Factors in Modernization Project is directed by Professor Federick W. Frey of the Center for International Studies, MIT. The project is sponsored by the Advanced Research Projects Agency and the Office of Naval Research of the US Department of Defense, Contract No. N00014-66-C0163.

Excellent readings existed. We had established to our satisfaction that lectures were not a very effective technique for unifying the presentation and supplementing the reading in a large course such as ours with a wide variety of teachers from different backgrounds. We had found that where the material was available visual experience of the raw social situation that a motion picture could provide, did do what we wanted done. However, we were appalled at the paucity of motion pictures of the kind that we needed. There were many documentary films intended for educational purposes at a much lower level. They were either intended for high schools or, if intended for college audiences, they talked down to our students, they were not like the readings in being the best possible presentation of the facts. There were also films that had not been intended as educational films, but brought an experience home vividly. There were, however, almost no films that tried to use that medium for as serious a scholarly presentation of a problem and as eloquent a presentation as the books and articles that we were able to assign. That conclusion may well be identified as one of the key outcomes of this exercise.

Developments Since the Curriculum Experiment

Curriculum reform is never final. Education takes place in an ongoing stream of social change and what is appropriate at one moment may not be at another. Indeed, it is often argued that the only good curriculum is one that is in the process of revision. For without the energy and thought that goes into revision education becomes routine.

The experiments that we are describing in some sense came to an end in 1966-67; in some sense it is continuing as a permanent part of the M.I.T. curriculum. At the end of the experimental period Professor Ithiel Pool turned over direction of the course to Professor Roy Feldman who had worked in it all the the initial period. Professor Pool felt, however, that a comprehensive introductory course of the kind we are describing should not be the expression of any one man's point of view. He felt the time had come to allow a new perspective to influence the program. Also Professor Pool felt that to interest the faculty in participating periodically in this course, they had to be kept excited about possible revisions. Thus, the course as it exists today is somewhat, though not drastically, different from the course that we studied and are here describing.

Perhaps the most important source of difference is that the times have changed and the students have changed. We went into this effort at a period when one could say that the American student body, particularly in technological institutions, was not highly motivated politically and that a crucial problem was to capture their interest by focusing rather heavily on the life experience of the individual, a somewhat more private immediate concern to most adolescents at that time than the macroscopic problems of society. In 1969 we seem eons away from that situation of five years ago. Students are deeply troubled and concerned by the great public questions of war and peace. Their quarrel with the social sciences is not that they are dull, but rather that they might prove manipulative on behalf of the establishment. A course that looks only at the little problems of the individual in society and does not show a concern for what to do about the great issues of destruction will infuriate many students. Professor Feldman has responded to this change in environment. Most of the changes made in the course outline have been precisely in the direction of responding to the present sense of social relevance.

Other changes in the environment are the result of the course itself, (this is the universal problem of the social sciences, that because of the fact that when one learns it changes the very situation that one previously studied.) The humanities offerings, as they existed when we introduced the sophomore social science course, are quite different from what they were in 1964. At that time we moved to fill a gap, in the normal and healthy competitive way of organizations. Our colleagues in history, seeing large numbers of students opting for a course that filled legitimate educational needs began, themselves, to increasingly try to fill those same needs. Today it would no longer be very accurate to describe the social science offerings and the history offerings as representing sharply divergent educational streams. The course in revolution that the History Department offers in the sophomore year is in every sense an excellent social science course. It is just as feasible and relevant for a student to move into junior and senior social science courses via the history option as via the social science option. We regard this as a success of our effort. The payoff of the project has not been only in the sophomore social science course but in the other courses that were effected by its existence.

Along with curriculum development, the project for the Office of Education included an evaluation component. Research on the effectiveness of the course has been carried out by several graduate research assistants under the direction of Dr. George W. Angell, Jr., an educational psychologist and Lecturer in our department. Much of the analytical work has been done by Mr. Peter Powell.

Our Evaluation effort covered the following four topics:

1. Evaluation of the teaching procedures.
2. A computer simulation of what the students took away from the course.
3. An assessment of the extent of selective recruitment to the social science option as compared with the alternatives.
4. An attempt to measure empirically changes in attitude and information that the course produced.

Evaluation of Teaching

We have above noted certain conclusions about the relative effectiveness of the lectures, movies, reading material and other pedagogical elements of the course. The basis for these judgments was rather elaborate and systematic set of questionnaires and observations.

Each semester, brief questionnaires were administered at mid-semester and again at the end of the semester to both students and faculty to provide information as to the adequacy of the selected reading assignments and the perceived value of each lecture. During the 1965-66 year, questionnaires on each week's readings and lectures were also administered to the students on a weekly basis. In addition, trained observers were used to record what took place in the interaction in the seminar groups. The main focus of the observation was the subject-matter coverage and extent of student participation in the seminar groups, each of which was observed for one week during each semester of the 1964-65 academic year. A comparison of the observer's reports on the nine sections indicated clearly that there were, in effect, eight different courses being taught. In other words, only two of the seminar leaders were operating in parallel. Discussion of these findings by the faculty of the course resulted in the preparation of an extensive syllabus, complete with a wealth of possible questions for discussion for each topic, prior to the beginning of the 1965-66 school year.

During the 1965-66 year, observers were assigned to every seminar meeting each week. They recorded topics under discussion, time devoted to each topic and student participation, including number and extent of student-student and student-teacher interchanges. A summary and synthesis of these reports indicated that all seminars were covering essentially the same material with about the same amount of time being devoted to each topic, although the amount and nature of the student and faculty interchanges were highly variable. This experience documented for us the extraordinary value of such a set of stimulating questions. These weekly question-sets effectively did what we had hoped to have achieved by the lectures; namely to provide substantial unity to the course while permitting the individual instructors wide lattitude to follow their own bents. The ways in which the questions were treated might vary greatly but all classes began addressing themselves to a set of common issues.

One of the most important aspects of the research program was the immediate feedback to the faculty of certain of the results. All of the data collected by questionnaires and observers were made available to faculty members, who met regularly throughout each semester. Reports were presented to each by the seminar observer assigned to his group (who conducted informal interviews with students), and by research assistants (who provided informal counseling service for students who had problems or comments they did not care to discuss with their seminar leaders.) At the close of each semester, a two-hour staff meeting was held solely for a critique of the course. At these meetings, research data were utilized in planning revisions in the course for the following semester.

Simulation of the Course

A particularly innovative part of our research program was an attempt to develop a computer simulation model of the mind of a typical student in the course.[1] Later on we shall report on a more conventional empirical attempt to ascertain what students got out of the course. The more conventional approach was relied on by us for getting substantive assessments of attitude change. The simulation was regarded rather as an experiment. It was designed to ascertain whether or not one could predict from teaching emphasis and mode of presentation which items the students would retain. The success of the experiment is significant indicator of a desirable direction for future research, even though it was not relied on heavily enough in this first trial to have produced any substantial quantity of substantive conclusions about this particular course.

The basic framework of the simulation model was provided by Crisiscom,[2] a computer simulation of information processing by decision-makers in an international crisis. Originally, Crisiscom was constructed on the basis of three psychological principles:

1. People pay less attention to facts that contradict their views.
2. People pay more attention to news from a trusted, liked source.
3. People pay more attention to facts that they will have to act on or discuss because of attention by others.

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[1] A copy of the report of this study done by a graduate research assistant, Mr. Matthew Bonham, is included as Appendix B, "Crisiscom in the Classroom".

[2] The Crisiscom simulation program was supported by the Naval Research Laboratory under a contract to the Simulmatics Corporation and by the Advanced Research Projects Agency of the Department of Defense under Contract 920F-9717, monitored by the Air Force Office of Scientific Research, with the Center for International Studies, MIT.

Although Crisiscom was designed to simulate the behavior of national decision-makers, it has a wide variety of potential applications. The principles of selective attention are applicable to many human information-processing situations. The forgetting curve used in Crisiscom is an exponential function taken from studies of learning. Likewise, the notion that one's attitudes can be modified by new information is a general principle from social psychology.

In the classroom, students process a large number of "messages", They receive information from the teacher; some of it is attended to, while other information is ignored. Usually students make notes on the messages that seem to be the most important. However, even this information is often forgotten and has to be relearned for the examination. Occasionally, the material students learn has an impact on their attitudes; it may change their affect toward the subject or even their view of the world. In short, Crisiscom seems to be applicable to the study of human information processing, form international politics to the classroom.

The principles of Crisiscom, as we applied them to the study of the students in 14.003, became:

1. Students will pay more attention to material they have read or learned before.
2. Students will pay more attention to material presented by a lecturer they like.
3. Students will pay more attention to material they will have to act on or discuss because of attention by their seminar leaders.

Data for the Crisiscom model were collected during the first part of the course in the fall semester, 1964. From five to seven messages were selected from each of the first six lectures. The messages were social science concepts that were discussed during the lecture. After the six lectures, data necessary for the salience-bias and salience-decay routines of Crisiscom were obtained. No effort was made to get data on affect, although this could easily have been done. In addition, the students were tested to determine the actual salience of the messages after the series of six lectures. The Crisiscom model was then run and its predictions were compared to the observed salience data. Optimum and its predictions were compared to the observed salience data. Optimum decay rates (forgetting) resulted in correlations as high as .52 between percent of students remembering each concept and the Crisiscom prediction of the percent who would remember.

We believe that this study holds very considerable promise for use for a variety of purposes, such as aiding student-teachers in evaluating the long-term effects of their teaching on students and other such interactions of a complex of cognitive and affective variables.

The significance of this experiment is that it opens up a new strategy for research on the effect of education. A general observation on studies of the impact of educational material is that consequences are hard to detect and even harder to prove. There are a number of reasons for this. Most educational evaluation research is done as an appendage to operating programs in which it is more important to carry out the program than to modify it so as to make a clean, controlled experiment. Our own study was no exception in this respect. Had our primary purpose been research we would have exposed students who were randomly selected to one curricula program or another. As it was, we allowed self-selection to operate because anything else would have been unfair to the MIT students who were primary objects of concern. As Campbell and Stanley have pointed out,1/ the vast

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1/ Donald T. Campbell and Julian C. Stanley, Experimental and Quasi-experimental Designs for Research, Rand McNally, Chicago, 1963.

majority of research studies fail completely for that and similar reasons to provide solid evidence of effect. The educational material offered is confounded with other educational experiences of the subjects and other experiences that they have in daily life. Our own research certainly suffers from all of these problems.

The simulation approach is a way around our inability to exercise adequate controls. One inserts into the simulation parameters designed to express and estimate the consequences of all of the confounding and intervening variables of which one is aware, and ends up with a prediction of what the student should know or believe at the end of this compound process. If the predictions are confirmed repeatedly over a variety of circumstances and periods of time, one may gain confidence in the model and in its estimates of the impact of the teaching material. The fact that we were able to obtain reasonably good predictions of which particular concepts the student learned in a short experimental period suggests the value of further research of this kind.

Organization of Research on Student Response

The research group, headed by Dr. Angell, attempted to evaluate the impact of the course through a comparison of change in beliefs, attitudes, values and knowledge of the students in the Social Science Course as contrasted with similar changes in students who tooks the history option.

During the 1964-65 academic year, a large quantity of data were gathered on the students in the social science option. For each student, we collected information from a variety of sources within the university: from the registrar's office, from the office of the Dean of Admissions and from the office of Psychiatric Services. These data were molded with test scores, questionnaire results and interview data for each student. Most of the summer of 1965 was devoted to synthesizing the information so collected and to an initial analysis, the thrust of which was to determine those areas most likely to prove fruitful for investigation of the 1965-66 students (our major experimental group).

During the first semester of the 1964-65 school year, a sample of approximately 50 students was selected from among those opting for social science and a parallel sample from among the students taking the history option. Both groups of students were administered an extensive interview near the beginning of the semester and were re-interviewed and adminstered a TAT (McClelland's six-picture version) at the end of the semester. Thus it was possible for us to contrast the two groups not only on the basis of initial differences but also in terms of change over the course of the semester. In the case of our experimental group, we had approximately 40 cards full of data: a vast amount of information to interrelate and analyze definitively.

In the course of the preliminary analysis, marginal tabulations were obtained of all interview questions and Pearson r's were computed for all 1225 possible intercorrelations among the 50 continuous variables for which we had data. These variables included grades on the mid-term examination, term paper research project, the objective and essay portions of the final examination, final grade in the course, CEEB SAT-V score, SAT-M score, CEEB Math Achievement score, grade point averages for each semester, cumulative grade point average for each semester and scores obtained on each of the 20 variables making up the Omnibus Personality Inventory. By sifting through these results, we were able to eliminate certain of the attitudinal items on the questionnaires and interviews and were able to infer certain areas which were inadequately tapped. On the basis of these findings, two new questionnaires were drawn up and were administered to students in the social science course in the fall and spring semesters of 1965-66. (The course, a one semester course, is offered every semester.) One of these questionnaires dealth with reasons for selecting the course and attitudes toward a variety of objects which, on the basis of our preliminary study, appeared to be important. The second questionnaire was intended to elicit personal background information. The first questionnaire was readministered at the end of the semester in order to provide a basis for evaluation of attitudinal change. The same three questionnaires were administered to a control group: students taking the history option in the spring semester, 1966.

Late in the spring semester, 1968, we mailed a modified version of our original attitudinal questionnaire to those seniors who had taken the social science option in either semester of the 1965-66 school year and to those who had taken the history option in the spring semester, 1966.

The summer of 1966 was spent in gathering data in our sample from sources supplemental to the direct data collection we had engaged in during the school year--data from such sources as the Admissions Office, the office of Psychiatric Services, the registrar's office, etc.--and assembling these into a cohesive and analyzable whole.

Originally, our intent had been to analyze our data through the usual batch-processing computer procedures. However, since this project began, ADMINS[1] (Administrative Data Methods for Information Management System), the purpose of which is to allow the researcher to interact flexibly and directly with his data via a time-sharing computer system, was developed to a point such that it became usable for processing purposes. As a result, we spent several months in defining the data in the terms of the ADMINS program.

Self-Selection

If there are differences in the attitudes and behavior of persons who have taken the sophomore Social Science option and those who have not, it does not follow that the course is responsible. It is at least equally likely that the Social Science option and the History option are tapping different populations. There was every reason from previous research at M.I.T. to believe that that might be so. Other studies have found a propensity by Math and Science students to opt for Humanities outside their major and for Engineering students to opt for the social sciences when faced with similar electives.

The choices we are studing, however, were a little more complicated. At the beginning of the sophomore year a student could opt for either a Literature or Philosophy or History or Social Science course. If he picked either a Literature of Philosophy course then in the second semester he would have to a choice between a History or Social Science course, then in the

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1/ The ADMINS Project is supported by a National Science Foundation grant entitled "Methods for Computer Handling of Large Social Data Files."

second semester he could choose between a Philosophy or Literature course. There is a reason to think that to substantial degree students in their first semester chose that course which was most attractive to them; thus, in the first semester we probably got those students most strongly attracted to Social Science. In the second semester we got a larger number of students whose first choice had been in the Humanities and who were now choosing between two courses that were in may respects similar, a rather Social Science oriented History course or a straight Social Science course. As we will note below, there are substantial differences between the fall semester and spring semester class that we studied. On the other hand, the differences between the experimental group who opted for the Social Sciences course and the control group who opted for the History course are in many instances surprisingly small, with an eye to these considerations, the research group, at the beginning of the project formulated two hypotheses about the self-selection that would occur:

1. Students who select the social science option will exhibit slightly less n-achievement- and slightly more n-power and n-affiliation than will those who select the history option.
2. Students who select the social science option in preference to either the history or philosophy offerings will tend to have different character trait-profiles than those who select either of the other two options.

These turned out to be wrong.

In the early stages of our analysis, we focused on gross differences between the experimental and control groups as reflected in the personal background variables. Our findings indicated that except for a slightly higher socio-economic level in the experimental group, the two groups were essentially the same kinds of students. Since we felt that these minor environmental differences did not sufficiently explain the attitudinal differences which existed between the two groups, we attempted further to isolate the crucial biographical variables which might affect attitudes toward social science.

In order to do this, a systematic set of 2 X 2 contingency tables was produced for each group with the A variables (background) as the columns, and the B variables (attitudes) in the rows. These tables provided the basis for the recombining of certain variables and the collapsing of several categories into a few entries, thus increasing the cell frequencies, and making more apparent any existing relationships. Using these reconstituted variables, we hoped to find attitude-response patterns which reflected the influence of the respondent's environment and showed more clearly any real differences between our experimental and control groups. Even with this refinement, however, no statistically significant differences of nay consequence were discernible.

The analysis of the personality data, which consisted of scores on the Omnibus Personality Inventory, passed through several modifications worth noting. At first, the scores were broken down into score intervals, each of which became a nominal entry such as high, average or low. Each OPI category, such as TI (Thinking Intorversion) or TO (Theoretical Orientation), was then studied in relation to the attitudinal and biographical variables. The results were neither consistent nor systematic.

We are therefore forced to conclude that whatever differences were found in the behavior, learning and attitudes of students who elected the Social Science option and students who elected the History option are not easily explained by either social background variables or personality variables. There is, however, another set of variables on which we do find interesting differences between groups; namely, prior interest in politics. Fundamental explanatory variables are hard to find, but by the time our students had reached their sophomore year, some were already interested in current affairs; other less so, and that did seem to effect their cross-selection behavior.

Specifically, those with a prior interest in politics (and they tended to be Democrats and Liberals) elected the course in the fall term. On the other hand, those who entered the course in spring term, and those who opted for the History course, were not very different. Both of the spring semester groups tended to be more of a cross-section of the student body. Table 1 is a summary of respondent preferences for a political party.

TABLE 1: POLITICAL PARTY PREFERENCE

POLITICAL PARTY PREFERENCE (1965-66)		Social Science Option		History Option
		Fall	Spring	
DEMOCRAT	RAW N	20	24	34
	PCT 1/	36	25	26
REPUBLICAN	N	15	34	40
	PCT	27	36	30
NONE	N	18	34	53
	PCT	32	36	40

1/ PCT is the percent based on the total number of students who completed the questionnaire on which the results are based (Questionnaire 2, in this case) not on the total number of student responding to the question.

None of the groups is dominated by students of any single party. However the fall social science group has the highest percentage of Democrats, the spring social science group the highest percentage of Republicans, and those electing history the largest percentage of independents. The three groups differ somewhat more with respect to their level of political interest. Tables 2, 3 and 4 summarize the differences in interest in national, state, and local politics respectively.

TABLE 2: INTEREST IN NATIONAL POLITICS

INTEREST IN NATIONAL POLITICS		Social Science Option		History Option
		Fall	Spring	
VERY INTERESTED	N PCT	30 46	22 23	32 24
MODERATELY INTERESTED	N PCT	27 42	45 47	65 49
SLIGHTLY INTERESTED	N PCT	6 09	25 26	32 24
NOT AT ALL INTERESTED	N PCT	1 02	2 02	2 02

TABLE 3: INTEREST IN STATE POLITICS

INTEREST IN STATE POLITICS		Social Science Option		History Option
		Fall	Spring	
VERY INTERESTED	N	12	6	7
	PCT	18	06	05
MODERATELY INTERESTED	N	19	27	35
	PCT	29	28	26
SLIGHTLY INTERESTED	N	28	41	68
	PCT	43	43	51
NOT AT ALL INTERESTED	N	3	18	21
	PCT	05	19	16

TABLE 4: INTEREST IN LOCAL POLITICS

INTEREST IN LOCAL POLITICS		Social Science Option		History Option
		Fall	Spring	
VERY INTERESTED	N	9	9	11
	PCT	14	09	08
MODERATELY INTERESTED	N	23	24	23
	PCT	35	25	17
SLIGHTLY INTERESTED	N	22	39	59
	PCT	34	41	44
NOT AT ALL INTERESTED	N	10	20	38
	PCT	15	21	29

> The fall social science group includes the highest percentage of respondents interested in politics at all three levels, with interest in national politics drawing a higher proportion of interest than politics at either the state or local level. The two spring groups are close to indistinguishable in political interest.

78% of the fall social science group regularly read news or political commentary magazines, compared with 72% of the spring social science group and 66% of the history group.

In general, the most important self-selection factors were apparent in comparison between semesters rather than between options.

Effects of the Course

Most before-after studies of the effects of communications, whether educational or otherwise show one of two patterns of effects: no measurable effect, or a short run effect followed by a reversion of the respondent almost to his original attitudes. In many respects our study is no exception. In most respects, except for those most heavily stressed in our course, there is no measurable difference between the development of beliefs and attitudes among our students and the students in the control population who took history. In some respects there are short run effects that disappear over time. What is more significant, however, is that on a few points, the ones most stressed in our course, the course does seem to have started a cumulative process of change.

There are complications in measuring the effects of the course. The variation between the student body in the Sophomore Social Science course in the fall and spring semesters of 1965-66 had interesting implications for our evaluation of the effectiveness of the course. In general, it can be said that in the fall semester the course was still in a shake-down status and ran unsatisfactorily in a number of respects. There were a number of sources of student malaise. By the spring the course had been brought to a highly satisfactory level of performance. The improvement was in very large part the result of the evaluation research, the student questionnaires, and the participant observer reports, The morale of the students in the spring semester was excellent.

We find, thus, a curious interaction. In the fall semester we had a highly motivated, highly self-selected group of students with an intense interest in public affairs and a readiness, therefore, to respond favorably if what we had offered them was adequate, or conversely, with expectations that would be more severely disappointed if it were not. By spring we had a much more representative group of students, without the same positive motivation, the same high expectations, the same intensity of interest. It was to them we offered a fully polished course that worked well.

The consequences of this change in both students, in expectations, and in the course offering, are reflected in a series of questions that measure attitudes toward the course. We find, for example that both in the fall Social Science group and the spring History group interest in the subject area was the prime motivation for taking that particular option. Whereas in the spring Social Science group disinterest in the other alternative loomed fairly large. Table 5 summarizes the responses to the question, "why did you decide to take this course rather than one of the other options?"

TABLE 5: RESPONSES TO THE QUESTION, "WHY DID YOU DECIDE TO TAKE THIS COURSE RATHER THAN ONE OF THE OTHER OPTIONS?"

Reason Given		Social Science Option		History Option
		Fall	Spring	
INTEREST IN SUBJECT AREA	N	52	54	77
	PCT	54	37	56
RELEVANCE TO INTENDED PROFESSION	N	9	17	1
	PCT	09	12	01
DISINTEREST IN OTHER OPTION	N	20	48	29
	PCT	21	32	21
RECOMMENDATION OF STUDENTS WHO TOOK COURSE PREVIOUSLY	N	8	15	7
	PCT	08	10	05

At the beginning of the program, the research group formulated three hypotheses about the effects the course would have:

1. Students in the social science option will show a significant positive change in attitude toward the social scientist as a scientist, toward the social sciences as promising roads to the solution of practical social, political and economic problems and toward the applied practitioners of the social sciences: politicians, social service workers, psychiatrists, clinical psychologists, and the like.
2. Students in the social science option, by the end of the course, will have increased markedly their knowledge of some of the sources of data--raw and digested, quantitative and verbal--with which the social scientist works. Students will also have acquired familiarity, through experience, with some of the more important methodological tools.
3. Students in the social science option will acquire a significantly enhanced understanding of a sample of the basic social, political and economic problems facing the world today, together with some understanding of how the results of physical and social science can supplement each other in the solution of these problems.

Let us start by considering the changes that occurred in interest in politics andpublic affairs between the first questionnaire filled out by the students at the very beginning of the course, the third questionnaire filled out by them at the end of the course and the fourth questionnaire filled out by them at the end of their senior year. Table 6 summarizes responses to the question, "How interested are you in political affairs?" The general conclusion must be that four years of experience at M.I.T. raises student interest in politics, but that the course itself is not necessarily efficacious in this respect. The self-selected group who took the course in the fall had the highest interest in politics at the start and did show increased interest after the course. The two spring groups showed a lower initial interest, showed no immediate gain, but who come gain in interest during their junior and senior years. They remained somewhat less interested than the fall semester group.

TABLE 6: INTEREST IN POLITICAL AFFAIRS

Degree of Interest		Social Science Option Fall Ques 1	 Ques3	 Ques 4	 Spring Ques 1	 Ques 3	 Ques-4
VERY INTERESTED	N	25	26	39	28	11	45
	PCT	32	46	51	22	20	35
MODERATELY INTERESTED	N	30	22	30	51	31	66
	PCT	39	39	39	40	56	52
SLIGHTLY INTERESTED	N	9	8	8	23	13	15
	PCT	12	14	10	18	24	12

	History Option Ques 1	 Ques 3	 Ques 4
VERY IN INTERESTED	21	9	39
	21	17	40
MODERATELY INTERESTED	39	24	43
	40	44	44
SLIGHTLY INTERESTED	32	20	15
	33	37	15

Probably the most important goal of the social science course has been to convey to future scientists that an objective, scientific approach can be taken to the ascertaining of social facts. In order to assess the extent to which this objective was met, a group of questions relating to attitudes toward social science were embodied in the attitude questionnaires. Comparisons among the questionnaires provide useful indication of

1. How students viewed social science when they came into the course.
2. How students viewed social science upon completion of the course.
3. How much long-term attitude change occurred.

By the Senior Year

In each of the three attitude questionnaires, students were asked to indicate the extent of their agreement (or disagreement) with five statements[1] representative of the most frequently-voiced criticism of social science. For each questionnaire, student responses to the set of questions were combined into a single index. Table 7 presents a cross-tabulation of these indicies for initial and senior year questionnaires. Thus ,Table 8 provides an overview of change in attitude toward the efficacy of social science.

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[1] The five statements were as follows:

1) "Important social phenomena are not suceptible to prediction because they must be dealt with subjectively."
2) "Few scientific experiments can be run involving people; those which can be are not applicable to social phenomena."
3) "Mathematical thinking and techniques do not lend themselves to studying social phenomena."
4) "Although social phenomena can be explained, things are too complex and vague for prediction."
5) "Questions of morality, human values and philosophical notions generally outweigh other considerations making prediction largely useless."

TABLE 7: ATTITUDE TOWARD THE EFFICACY OF SOCIAL SCIENCE

	Questionnaire #1 Favorable (%)	Questionnaire #4	%
Social Science Option (Fall	67	Favorable	85
		Unfavorable	15
Social Science Option (Spring)	65	Favorable	85
		Unfavorable	15
History Option	56	Favorable	80
		Unfavorable	20
	Questionnaire #1 Unfavorable %	Questionnaire #4	%
Social Science Option (Fall)	32	Favorable	41
		Unfavorable	59
Social Science Option (Spring)	34	Favorable	83
		Unfavorable	17
History Option	43	Favorable	49
		Unfavorable	51

Here we find a most significant result from our evaluationnaires. Among the spring semester social science course students there is a remarkable increase in confidence in the efficacy of social science. All three groups of students started out with nearly the same view of social science efficacy; 2/3 of those choosing the social science option and 55% of the others gave positive answers. Among the students choosing the history option and among those students in the social science option in the fall semester when the course was less successful, there was little change. Among the students in the social science option in the spring semester, however, the change was quite notable. Among that minority of students who started the course with low confidence in the social sciences, fully 82% reversed their position.

TABLE 8: EFFICACY OF SOCIAL SCIENCE: Responses Indicating Disagreement with Statements Representative of Negative Attitudes toward the Efficacy of Social Science

Statement	Disagree	Social Science Option						History Option (Ques.)		
		Fall (Ques.)			Spring (Ques.)					
		1	3	4	1	3	4	1	3	4
1) "Important social phenomena are not susceptible to prediction because they must be dealt with subjectively."	N PCT	46 60	41 72	61 80	81 64	46 84	110 86	66 67	32 59	74 75
2) "Few scientific experiments can be run involving people; those which can are not applicable to social phenomena."	N PCT	55 71	48 84	61 79	93 73	47 85	113 88	61 62	36 67	70 71
3) "Mathematical thinking and techniques do not lend themselves to social phenomena."	N PCT	56 87	48 84	60 80	87 84	47 85	112 86	66 71	40 74	74 77
4) "Although social phenomena can be explained things are too complex and vague for prediction."	N PCT	54 85	46 81	54 70	86 85	45 82	95 76.	56 60	30 56	68 70
5) "Questions of morality, human values and philosophical notions generally outweigh other consideration making prediction largely useless."	N PCT	43 68	44 80	53 68	71 70	43 79	98 77	64 66	33 63	69 70

TABLE 8A: SEQUENCE OF CHANGES IN ATTITUDES TOWARDS EFFICACY OF SOCIAL SCIENCE PERCENTAGE POINTS CHANGE

		Questionnaire 1 to 3	Questionnaire 3 to 4	Questionnaire 1 to 4
Social Science Option (Fall) Statement +	1	12	8	20
	2	13	-5	8
	3	-3	-4	-7
	4	-4	-11	-14
	5	12	-12	0
Social Science Option (Spring) Statement	1	20	2	22
	2	12	3	15
	3	1	1	2
	4	-3	-6	-9
	5	9	-2	7
History Option Statement	1	-8	16	8
	2	5	4	9
	3	3	3	6
	4	-4	14	10
	5	-3	7	4

An examination of Table 8A shows a rather interesting phenomenon the greater success of the spring semester course was not so much a greater immediate effect as the avoidance of a post-course regression, for a number of the statements we find a substantial jump between questionnaires 1 and 3, in both the fall and spring semester social science studnets in the proportion saying that social science is possible (we don't find that jump among the history students during the period of the course). Among the fall semester students, the positive answers toward social science drop off afterwards fairly sharply, whereas among the spring semester students whose experience in the course was more positive, the attitudes persist or may in some instances even become stronger. Once more we should emphasize that this may not be solely the effect of the course itself revealed over a two-year period. It may also be that a successful experience in the course started the students down the road of greater involvement with social science work later on.

This most important significant result of our evaluation, that the course, (at least indirectly, when it ran well) seems to have to have had a substantial effect in the direction of its main purpose; namely, increased appreciation of the possibility of rigorous social science, was reexamined more closely in relationship to certain personal background variables. Specifically, we find that Democrats, who are presumably more liberal, and persons interested in political affairs, are more likely to see social science as efficacious. Note once more that these attitudes were found predominantly in the fall semester students. One might therefore, have expected them to see the social sciences in a more favorable light. Again, however, the impact of the more successful teaching in the spring overrode that factor. Tables 9 and 10 show the relationships between attitude toward the efficacy of social science (as derived from responses to Questionnaire 4) and political party preference and interest in political affairs, respectively, for students opting for social science.

TABLE 9: ATTITUDE TOWARD EFFICACY OF SOCIAL SCIENCE AND POLITICAL PARTY PREFERENCE

Party Preference		Social Science Efficacy			
		FAVORABLE		UNFAVORABLE	
		Fall Soc. Sc.	Spring Soc. Sc.	Fall Soc. Sc.	Spring Soc. Sc.
DEMOCRAT	N	19	37	4	6
	PCT	27	29	06	05
REPUBLICAN	N	15	28	3	6
	PCT	21	22	04	05
NONE	N	16	41	14	8
	PCT	23	32	20	06

TABLE 10: ATTITUDE TOWARD EFFICACY OF SOCIAL SCIENCE AND INTEREST IN POLITICAL AFFAIRS

Interest in Political Affairs		Social Science Efficacy			
		FAVORABLE		UNFAVORABLE	
		Fall Soc. Sc.	Spring Soc. Sc.	Fall Soc. Sc.	Spring Soc. Sc.
HIGHLY INTERESTED	N	30	41	9	4
	PCT	39	33	12	3
MODERATELY INTERESTED	N	18	52	12	14
	PCT	23	41	16	11
SLIGHTLY OR NOT AT ALL INTERESTED	N	6	12	2	3
	PCT	08	10	03	2

Next, let us consider the changes in what we call political cynicism, i.e., the extent to which respondents hold largely negative, pessimistic and stereotyped political perceptions. Table 11 shows the change in political cynicism[1] for the three group occurring between the administration of the first and last attitudinal questionnaires - an interval of approximately two years. There is some evidence to be found in Table 11

TABLE 11: POLITICAL CYNICISM

	Questionnaire #1 High (%)	Questionnaire #4	%	Questionnaire #1 Low (%)	Questionnaire #4	%
Social Science Option (Fall)	28	High	64	72	High	29
		Low	36		Low	71
Social Science Option (Spring)	22	High	59	77	High	35
		Low	41		Low	65
History Option	32	High	81	68	High	32
		Low	19		Low	68

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[1] The index of political cynicism was built for the responses of students to six Likert-type items. Students were asked to what extent they agreed (or disagreed) with each of the following six statements:

1. "Too many people in high places are working against the interests of our country."
2. "People who join the John Birch Society and people who join the Communist Party are really pretty the same."
3. "Most politicians are mainly out for themselves."
4. "People in other careers usually work harder than people in politics."
5. "The best man usually wins elections in this country."
6. "In order to get nominated, politicians frequently have to make shady deals."

that the social science course did have an effect. Neither course had any substantial differential effect on those on those students who started low in political cynicism. About 1/3 of them shifted to high by the end of their college career in a pattern of random movement, while 2/3 remained low. On the other hand, if one looks solely at the students who started highly cynical about politics at the time of questionnaire of those who took the History option, less than 1/5 moved to a low cynicism position by the end of their college career, whereas those who took the Social Science option in 36% to 41% of the cases changed. Let us emphasize once more that this cannot be domonstrated to be solely the effect of this one course. The students who took the social science option are more likely to have taken more social science courses subsequently. What we can say about the course is that it seems to have started a process among the minority of social science students who started with politically cynical views. Those who started with highly cynical views may have been more likely to be shaken if they went through the social science course.

The social science and history courses appeared to the students to have different types of relevance. When they entered the courses they actually expected the social science course to be more relevant to them as citizens then they did if they took the history course. With time, however, the images of the courses changed to a more realistic one. These changes are summarized below.

Students in the three groups were asked to which aspects of their lives they felt these courses (social science or history) would be relevant in terms of the following dimensions:

1) As a private individual
2) For professional life
3) As a member of a political community

Table 12 presents a summary of the students' expectations along the above dimensions. About three-quarters of each expected their course to be highly proportion belonging to the fall social science group (79%).

The highest degree of uncertainty over personal relevance characterized the spring social science group with 26% of the respondents giving responses midway between "highly relevant" and "irrelevant" (referred to in Table 12 as "somewhat relevant".) Substantially fewer respondents in all groups expected the course to be relevant professionally, with the smallest proportion belonging to the 21.08 history students.

Students in both fall and spring semester social science options expected their course to be more relevant to them as members of a political community than did the students opting for the history course. Eighty percent of the students who took the social science course during the fall semester, as constrasted with only 69% of those taking the same course during the spring semester, expected the course to be highly relevant to themselves as members of a political community. This finding, of course, reinforces previously discussed evidence that the fall semester students were initially more highly motivated and expected more from the course than did those who took the same course in the spring.

TABLE 12: COURSE EXPECTATIONS

Relevance		Relevance to Respondent as a Private Individual			Relevance to Respondent in His Profession		
		Soc. Sci. Option		History Option	Soc. Sci. Option		History Option
		Fall	Spring		Fall	Spring	
HIGHLY RELEVANT	N	77	102	103	43	55	30
	PCT	79	69	74	45	38	22
SOMEWHAT RELEVANT	N	15	39	23	33	52	38
	PCT	16	26	17	34	35	27
IRRELEVANT	N	5	4	10	21	38	67
	PCT	05	03	07	21	26	48

	Relevance to Respondent as a Member of a Political Community		
	Soc. Sci. Option		History Option
	Fall	Spring	
HIGHLY RELEVANT	78	103	65
	80	69	47
SOMEWHAT RELEVANT	15	30	42
	16	20	30
IRRELEVANT	4	12	27
	04	08	20

Tables 13 through 15 summarize the comparison between what respondents in each course expected initially and their subsequent evaluation of the course at the end of their academic careers at MIT. Discrepancies between expected and evaluated relevance ran highest in the personal dimension, where 24% of the fall social science group, 19% of the spring social science group and 17% of the history students found their course not up to expectations. The percentages of those asserting irrelevance in this dimension were small, but rose 21%, 26% and 17% in the fall social science, spring social science and history groups, respectively, on their final assessment. It should be pointed out that while dissatisfaction with the course taken is greatest along the personal dimension, expectations in all groups were also the highest in this dimension.

In the professional relevance dimension, where expectations of high relevance were held by fewer respondents, final evaluations were more closely matched with these expectations. Of the three comparison groups, the two social science groups expected their course to be more relevant professionally than did the history group. By their final evaluation, however, about 50% of all groups felt the course they had taken was irrelevant to them professionally .

TABLE 13: COMPARISON OF INITIAL AND FINAL PERCEIVED RELEVANCE OF COURSE TAKEN TO RESPONDENTS AS PRIVATE INDIVIDUALS

Perceived Relevance			Social Science Option		History Option
			Fall	Spring	
HIGHLY RELEVANT	EXPECTED*	N.	77	102	103
		Pct	79	69	74
	FINAL EVALUATION**	N	41	64	56
		Pct	55	50	57
SOMEWHAT RELEVANT	EXPECTED*	N	15	39	23
		Pct	16	26	17
	FINAL EVALUATION**	N	14	27	18
		Pct	19	21	18
IRRELEVANT	EXPECTED*	N	5	4	10
		Pct	05	03	07
	FINAL EVALUATION**	N	19	37	24
		Pct	26	29	24

* "Expected" frequencies refer to what respondents expected from the course at the outset (Questionnaire 1)

** "Final evaluation" frequencies refer to responses given to questionnaire 4, administered in 1968.

TABLE 14: COMPARISON OF INITIAL AND FINAL PERCEIVED RELEVANCE OF COURSE TAKEN TO RESPONDENTS IN THEIR PROFESSION

Perceived Relevance			Social Science Option		History Option
			Fall	Spring	
HIGHLY RELEVANT	EXPECTED	N	43	55	30
		Pct	45	38	22
	FINAL EVALUATION	N	29	39	24
		Pct	39	30	24
SOMEWHAT RELEVANT	EXPECTED	N	33	52	38
		Pct	34	35	27
	FINAL EVALUATION	N	16	28	24
		Pct	22	22	24
IRRELEVANT	EXPECTED	N	21	38	67
		Pct	21	26	48
	FINAL EVALUATION	N	29	61	51
		Pct	39	48	50

TABLE 15: COMPARISON OF INITIAL AND FINAL PERCEIVED RELEVANCE OF COURSE TAKEN TO RESPONDENTS AS MEMBERS OF A POLITICAL COMMUNITY

Perceived Relevance			Social Science Option		History Option
			Fall	Spring	
HIGHLY RELEVANT	EXPECTED	N	78	103	65
		Pct	80	69	47
	FINAL EVALUATION	N	44	73	51
		Pct	59	57	52
SOMEWHAT RELEVANT	EXPECTED	N	15	30	42
		Pct	16	20	30
	FINAL EVALUATION	N	17	31	22
		Pct	23	24	22
IRRELEVANT	EXPECTED	N	4	12	27
		Pct	04	08	20
	FINAL EVALUATION	N	13	24	25
		Pct	18	19	26

In the political relevance dimension, expectations were high for the two experimental groups and only moderate for the history group. In the latter group, an increase in evaluated relevance contrasted with decreases for both experimental groups. The largest decrease occurred in the fall semester social science group, which also exhibited the highest expectations. Few respondents in either of the experimental groups initially expected their course to be politically irrelevant. By the time of their final assessment, however, the percentages of respondents viewing the course as irrelevant for them as members of a political community increased 14% in the fall group and 11% in the spring group. A considerably larger percentage (20%) of the history group expected their course to be politically irrelevant, which agrees fairly closely with their final evaluation.

In viewing the overall picture of expectation vs. final evaluations, it is clear that the positive expectations of the two experimental groups were higher in every dimension but one (relevance as private individual), than were those of the history students. Similarly, their later evaluations were somewhat more critical, with higher judgments of irrelevancy in virtually all dimensions. The two experimental groups contrast with the control group in having had a greater percentage of students with high overall expectations, which often exceeded what they were able to derive from the course. The history students, on the other hand, expected less and, in a few instances, found greater relevance than they had expected.

One explanation for these observed differences might be that social science course represented something new at MIT, an experimental course using unorthodox teaching methods and promising much that was novel and challenging to the developing technology students. The history course, on the other hand, was a more conventionally designed survey course, in which few if any surprises were either expected or experiencec by the students. In this sense, then, the apparently more realistic expectations of its students were simply artifacts of the course itself.

Students in all three groups were asked for their recommendations in the design of a new course to be added to the social science-history options. Specifically, they were asked which of the three dimensions

1) relevance as a private individual
2) relevance in your professions
3) relevance as a member of a political community

they would like to see most strongly emphasized. The results are summarized in Table 16. The question was asked initially, in the beginning of the course, again at the end of the course and a third time toward end of their senior year at MIT. The most striking differences occurred between the first and final questionnaires. Fewer than half of those respondents in all three groups calling initially for stronger emphasis on professional relevance did so in their final recommendations. All groups show a marked increase in recommending greater political relevance. Differences between the first and second questionaire results were neither very systematic nor of sufficient magnitude to infer any single course effect. Similarly, the larger differences shown between the first and final questionnaires probably resulted from a combination of factors, including residual course effects and a developing political and social awareness, influenced, perhaps to a considerable extent by current events.

TABLE 16: RESPONSES TO THE QUESTION: "If a new course were to be designed to be added to the social science-history options in the sophomore year, which of the following three dimensions would you like to see most strongly emphasized?"

Desired Dimension of Emphasis		Questionnaire 1			Questionnaire 3			Questionnaire 4		
		Social Science Option		History Option	Social Science Option		History Option	Social Science Option		History Option
		Fall	Spring		Fall	Spring		Fall	Spring	
RELEVANCE AS PRIVATE INDIV.	N	35	66	74	36	37	42	47	73	67
	Pct	60	65	79	63	67	78	61	57	68
RELEVANCE IN PROFESSION	N	10	15	11	13	8	4	6	7	5
	Pct	16	12	23	15	07	08	08	05	05
RELEVANCE AS MEMBER OF A POLITICAL COMMUNITY	N	14	18	8	5	10	6	22	43	24
	Pct	24	19	09	09	18	11	29	34	24

Evidence on the amount of knowledge and depth of understanding of social science principles and the modus operandi of the social scientist is based mainly on appraisal of the content of the seminar discussions[1/] and the content of the end-of-course examinations. The examinations were prepared jointly by the faculty teaching the course and consisted of a one-hour multiple-choice part and a two-hour essay part. Coverage was comprehensive in the multiple-choice section (approximately 50-60 questions) and intensive in the essay section (where the student wrote on three of five questions presented.)

In sum, we are satisfied that we have designed a social science course for scientists and engineers which promotes a realistic view of the efficacy of social science and which provides most students with an understanding of both the nature of social science and how a social scientist works. We believe that this has been accomplished in a course with considerable rigor.

[1/] Appendix C is a copy of the digested data collected by observers of the seminar groups as prepared for feedback purposes to the faculty. Number of faculty-student and student-student interactions are recorded as well as subject-matter coverage of the discussions.

APPENDIX A

17.01

SOCIETY AND MAN

COURSE OUTLINE

Spring 1968

OUTLINE OF TOPICS IN 17.01: SOCIETY AND MAN

I. The Life of Man in a Changing Society: Industrialization and Human Behavior

  A. Pre-Industrial Life

  B. The Transition to Industrial Society

  C. The Diffusion of Innovations

II. Alternative Explanations of Why People Change

  A. Looking at Social Change as Rational Behavior: Man as a Utility Maximizer--or Is He?

    1. Empirical Studies of "Rational" Behavior

    2. Some Examples of Theories of Rational Behavior

  B. Looking at Social Change Through the Stimulus-Response or Influence Model of Human Behavior

    1. The Freudian View of Human Behavior (and especially the Freudian view of groups and leadership)

    2. Human Behavior in Primary Groups

    3. The Psychology of Persuasion

    4. A Case Study of Persuasion: Election Campaigns

    5. Psyche and Community: Political Leadership

17.01 SOCIETY AND MAN Spring 1968

Date of Lecture*	Course Outline and Assignments*	Lecture
1968 February 6	I. The Life of Man in a Changing Society: Industrialization and Human Behavior A. Pre-Industrial Life Required Readings: Benedict, Patterns of Culture	Introduction to the Course (Pool)
February 13	Required Readings: Parker, "The Kwakiutl Indians..." Banfield, The Moral Basis of a Backward Society	The Hunters (a movie)
February 20	B. The Transition to Industrial Society Required Readings: Lerner, The Passing of Traditional Society Weber, The Protestant Ethic and the Spirit of Capitalism	Modernization (Hagen)
February 27	No new required readings. Introduction to the term paper assignment.	Discussion of term paper
March 5	Required Readings: McClelland, "The Impulse to Modernization" ________, The Achieving Society	The Need to Achieve (a movie; comments, Hagen)
March 12	C. The Diffusion of Innovations Required Readings: Rogers, Diffusion of Innovations Coleman, Katz and Menzel, "The Diffusion of an Innovation among Physicians" Menzel and Katz, "Social Relations and Innovation in the Medical Profession..."	The Diffusion of Innovations

*The dates listed are the dates of the lectures. It is expected that the readings listed under each topic will be discussed at the seminar session in the same week. Therefore, the student should be finished with his readings for that week by the day of his seminar session. This outline lists only the titles of the required readings. The exact pages and optional readings are found in the weekly reading guide that follows.

Date of Lecture	Course Outline and Assignments	Lecture
1968 March 19	II. Alternative Explanations of Why People Change A. Looking at Social Change as Rational Behavior: Man as a Utility Maximizer--or Is He? 1. Empirical Studies of "Rational" Behavior Required Readings: Nair, Blossoms in the Dust Schultz, Transforming Traditional Agriculture Bauer, Pool and Dexter, American Business and Public Policy Simon, "Theories of Decision-Making in Economics and Behavioral Science" Mosteller and Nogee, "An Experimental Measurement of Utility"	Mid-term examination
April 2	2. Some Examples of Theories of Rational Behavior Required Readings: Smith, Wealth of Nations Edwards, "The Theory of Decision Making" Marschak, "Scaling of Utilities and Probability"	Policy Analysis (Altshuler)
April 9	B. Looking at Social Change Through the Stimulus-Response or Influence Model of Human Behavior 1. The Freudian View of Human Behavior (and especially the Freudian view of groups and leadership) Required Readings: Rickman, ed., A General Selection from the Works of Sigmund Freud Lasswell, Politics: Who Gets What, When, How	The Influence Model (Bonilla)
April 16	No new required readings. Introduction to research experiment. TERM PAPER DUE: April 17, 5 p.m.	Discussion of research experiment (Rogers)
April 23	2. Human Behavior in Primary Groups Required Readings: Asch, "Opinions and Social Pressure" Broom and Selznick, Sociology Homans, "Group Factors in Worker Productivity" Merei, "Group Leadership and Institutionalization"	Some Conditions of Obedience and Disobedience to Authority (Milgram movie)

Date of Lecture	Course Outline and Assignments	Lecture
1968 April 30	3. The Psychology of Persuasion Required Readings: Brown, et al., New Directions in Psychology	The Psychology of Persuasion (Bonilla)
May 7	4. A Case Study of Persuasion: Election Campaigns Required Readings: Berelson, Lazarsfeld, and McPhee, Voting	Republicans: The New Breed; Political Campaigning in California (movies)
May 14	5. Psyche and Community: Political Leadership Required Readings: Weber, Politics as a Vocation RESEARCH EXPERIMENT DUE: May 15, 5 p.m.	Political Leadership and Elections (Seasholes)
May 21	No new required readings. Review.	Summary of the Course (Johnson)

17.01

SOCIETY AND MAN

WEEKLY READING GUIDE

Spring 1968

Reading Guide. Week of February 6, 1968

I. The Life of Man in a Changing Society: Industrialization and Human Behavior

A. Pre-Industrial Life

Required Readings:

Benedict, Ruth, Patterns of Culture, Chapter I, Chapter II through page 41 in Mentor edition (through page 32 in Sentry edition), Chapters III, IV, and VI. (To be bought, either Mentor edition, $.50, or Sentry edition, $1.95)

Discretionary Readings:

Lazarsfeld, Paul, "The American Soldier--An Expository Review" in Public Opinion Quarterly, Volume 13 (Summer, 1949), pp. 377-404.

Optional Readings:

Mead, Margaret, The Coming of Age in Samoa. (Mentor, $.60)
Rousseau, Jean Jacques, Emile. (Available in paperback.)
________, The Social Contract. (Available in paperback.)
Wallace, A.F.C., Culture and Personality, pp. 6-16. (Random House, 1961)

It should come as no surprise that the course begins with a discussion of pre-industrial societies. Early students of society saw the study of primitive societies as a way of examining the possible origins of our own forms of social organization. While their view has generally been discredited as one which over-simplifies the historical process of social change, there are ample reasons for focusing on pre-industrial societies. It is true that when we do so the patterns of modern societies stand out in sharp contrast. By logically trying to define two end-points of a continuum of human behavior and organization, traditional vs. modern, we have a device for trying to conceptualize the processes of social change.

Moreover, since World War II a revolution has been sweeping the non-industrialized portions of the world. Virtually everywhere this political explosion, the emergence of independent new nations, has been accompanied by an attempt to achieve an industrialized, modern form of society. These revolutionary changes have presented pressing problems of public policy for the leaders of the new nations and for the great powers like ourselves who vie for political influence in these new nations. But of even greater concern to those concerned with this course is the fact that the United States, as a world leader in science and technology, has committed itself to large-scale programs of foreign aid and technical assistance. These efforts are aimed at promoting social and economic change and guiding the direction it will follow. This has resulted in an intensive effort on the part of social scientists to provide adequate knowledge which can be used to guide the choices of decision makers and technicians involved in the development process. These practical requirements have presented social scientists with a vast human laboratory and this has greatly stimulated the expansion of social science theory and methods.

Therefore, the required readings of the first two weeks will introduce you to life-styles in some non-industrial societies. On the following pages you will find a series of questions intended to direct your reading. Consult this "Discussion Guide" before each week's assignment.

1. In his introductory lecture, Professor Pool suggested that Durkheim's study of suicide was a classic piece of social science research because it clearly involved two essential operations:

   (a) Careful empirical observation (i.e., the statistics on suicide rates in various countries and social categories of individuals).

   (b) A unifying explanation, the identification of some underlying mechanism which could account for his data (i.e., the theory of "anomie").

   Can you find these two essential operations in Benedict's Patterns of Culture? To be specific:

   (i) Can you identify Benedict's methods of observation? What is the nature of her evidence?

   (ii) Benedict variously refers to her unifying explantion in the following terms: "mainsprings of the culture," "cultural intentions," or "characteristic purposes" of a culture. Can you briefly summarize in your own words the underlying explanatory mechanism which she offers to students of society?

2. Later on in the course we shall be very much concerned with the problems of political leadership and participation. Does Benedict say anything pertinent to the question of the relationship between political leadership and the nature of a society?

3. From your own impressions of modern society can you find any generalizeable differences between it and all primitive societies as described by Benedict?

4. If you consider the kinds of societies described by Benedict, do you see any particular obstacles which would seriously impede planned social change in the direction of a modern society?

5. A major aim of this course will be to contrast two models of man: (1) as a rational decision maker and (2) as an actor subject to various psychological/social influences. Does Benedict say anything of interest on how rational behavior is in primitive societies? (There is a relevant discussion of how various peoples react to the death of close relatives in Chapter VIII.)

6. How does Benedict conceive of the relationship between an individual and his society?

7. What role does a knowledge of history play in the scientific approach to cultural analysis suggested by Benedict (e.g., see page 203, Mentor edition or page 232, Sentry edition)?

8. Benedict suggests that the possible variations in human behavior are exceedingly large How, then, does a culture manage to obtain a certain limit to its accepted norms of behavior?

9. "In the beginning God gave to every people a...cup of clay, and from this cup they drank their life....Our cup is broken now." (Benedict, p. 33, Mentor edition; p. 21, Sentry edition). What does this quotation mean?

10. What is meant by "configurational" analysis; "functional" analysis?

11. A scientific proposition about a culture should predict something about what behavior will occur in it. If one explains one extreme form of behavior as a reaction formation against another extreme form of behavior then isn't it true that anything can happen and there is no prediction?

12. The sharpest critic of Ruth Benedict's description of the Kwakiutl is Helen Codere. We reproduce here a few quotations from her article "The Amiable Side of Kwakiutl Life: The Potlatch and the Play Potlatch," *American Anthropologist*, Vol. 58 (1956), pp. 334-351. What are your reactions to the two views?

> "Field work among the Kwakiutl in 1951 produced evidence of a kind of potlatching, play potlatching or potlatching for fun.... The 1951 field data include much new material on home life, child rearing, and humor that supports Boas' claim that the private life of the Kwakiutl possessed many amiable features....(p. 334)
>
> "Boas /gives a/ first hand account of the winter dances and potlatches of 1895-96 in which there are incidents of funmaking ....(p. 334)
>
> "In spite of the extreme degree of Kwakiutl acculturation evident in 1951, some of these usages were present in the context of human interrelationship, and their meaning can be recovered and detailed. For example, one set of great-grandchildren called their great-grandfather 'Doggy Face' (^{E}wátsEmalE), and two other great-grandchildren related through a second daughter called him 'Doggy Collar' (Malú). These terms are in the same category as those given by Boas (1921:1396) and differ from the proper kinship word for grandfather (1921:1448). The remarkable thing about the relationship between the great-grandchildren, a boy of eight and a girl of six, and their 'Malú' was its symmetrical comradeship. Facts that the relationship seemed to take no notice of were a gap of over seventy years in age, the blindness of the old man, his general infirmity in contrast to the bounce of the children, and his past high rank among his people and, in other contexts, his still proud consciousness that he had held great names and done great things in the potlatch. The children showed no deference, constraint, or separateness, and he exacted none. If the little girl hid his indispensable cane, he laughed with her as he fumbled for it in the corners of the hallway. All three thought it a very funny joke on him when in his blindness he missed the low settee and sat down heavily on the floor....(p. 336)
>
> "It is precisely in respect to potlatching that such interprative judgments of the character of Kwakiutl life as 'atrocious,' 'paranoid,' 'rivalrous,' and 'grossly competitive' have been made....(p. 338)
>
> "Some of the skits and incidents that formed part of the ten days of winter ceremonials and potlatches were plain funmaking.... There are five extremely clear instances of funmaking.
>
> "To anyone who would regard Kwakiutl as impelled by an unqualified straining for self-maximization and glorification and triumphing over rivals the following skit would seem peculiar indeed (Boas 1897:546):
>
>> 'A man rose who acted as though he was a Haida. He delivered a speech, during which he made violent gestures, imitating the sound of the Haida language. An interpreter

who stood next to him translated the pretended meaning of his speech, which was supposed to be of the nature of thanks to the host for the soap berries, because they were one of the principal food articles of the Haida, and because the speaker was pleased to eat the kind of food to which he was accustomed in his own country. He continued, saying that he carried a box filled with food which he was going to give to the person who would pronounce his name. Then the host's daughter was called upon, and was asked to say his name. He began, G.a´tsō, which she repeated; Sē´as, which she also repeated; then followed, spoken very rapidly, Qoagā´n̄ Gustatē´n̄ Gusgitatē´n̄ Gusoa´t Qoagê´ns Quqa´xsla. Then she said: "I can not say this; I must go to school in order to learn it." The Haida asked her to go to school with him for four nights; then she would know it. The girl's father interrupted them, saying that he wanted to wash his daughter before she went to school with him.'

"....other skits are of particular interest because they are potlatches, but potlatches given in a humorous frame of reference ....(pp. 338-339)

'...the door opened, and four men dressed as policemen entered....

'The last of these acted the judge and carried a book. He sent the policemen around asking if everybody was present, and KuLE´m asked, "Are all here?" The people replied. "Yes." Then the two other policemen went around, looked at everybody, and stated that one person was missing. They went out, and soon returned leading the old woman Gudo´yo, whose hands were fastened with handcuffs. Then they pretended to hold court over her on account of her absence. The judge pretended to read the law on the case, and fined her $70. She replied that she was poor; that she was able to pay in blankets but had no ready money. KuLE´m, who acted the interpreter, pretended to translate what she said into English, and the payment of 70 blankets was accepted. Then the friends of Gudo´yo turned against the judge and said: "That is always your way, policemen. As soon as you see anyone who has money, you arrest him and fine him." She was unchained, and the policemen went back to the door. (Boas notes here that "this performance was first introduced in 1865, and has been kept up since that time.")

'They called K·ēx· and his friends, the killer whales, and told them to fetch the 70 blankets. The cousin of the old woman, who was the speaker of the Maa´mtag·ila, told them where to go, and soon they returned. Gudo´yō's sister, Le´mElxa´lag·ilîs followed them, dancing. All the people were singing a ha´mshamtsEs song for her. The blankets were distributed in her name....' (Boas 1897:562-63). (pp. 339-340)

"....The Kwakiutl case at present seems to leave configurationists two lines of argument, neither of which would do much for the theory as it stands. The first would be a mystical claim that the Kwakiutl evidence of play potlatching and other amiable characteristics could be understood as a vacation from tension or a temporary transvaluation of the central and continuous Kwakiutl values that was necessary to maintain the harsh and serious system. Such a position would indeed be mystical. As a device for dealing with contradictory evidence it would have everything in its favor except the vital factor of demonstrability. The second line of argument open to a configurationist would seem to be to abandon the claim of speaking of true integration and to assert that a culture or cultures can possess only neurotic integration or a spurious sort of integration that is necessarily full of conflicts, contradictions, and cross-currents which achieve at best but a perilous balance....It is therefore also necessary to concede that the Kwakiutl case is no longer support for configurationist theory and that, if some reworked configuration is in time produced, it will have to be along lines much more complex than those of simple analogy between a neurotically integrated individual personality and a whole integrated culture....A more positive statement follows the well-known and scientifically supported humanistic generalization and basis of criticism: no person or people is in truth all black or all white." (pp. 348-349)

Reading Guide. Week of February 13, 1968

I. The Life of Man in a Changing Society: Industrialization and Human Behavior

A. Pre-Industrial Life

Required Readings:

Parker, Seymour, "The Kwakiutl Indians: 'Amiable' and 'Atrocious'" in Anthropològica, Vol. VI, No. 2 (1964), pp. 131-134 top, 135 middle-136 middle, 137 top-140 middle, 143 middle-148 bottom, 153-155. (To be reproduced.)

Banfield, Edward, The Moral Basis of a Backward Society, pp. 15-32, 43-45, 49-175. (Library and rental set, Free Press, 1958; available in paperback, Free Press, 1967, $1.95,pp. 17-32, 45-47, 49-166 in paper edition.)

Optional Readings:

Lewis, Oscar, The Children of Sanchez. (Random House, 1961)

Barzini, Luigi, The Italians. (Atheneum Publishers, 1964; Bantam, 1965)

Galtung, Johan, "The Structure of Traditionalism: A Case Study from Western Sicily" in Journal of International Affairs, Vol. XIX, No. 2 (1965), pp. 217-232.

The following excerpts from Luigi Barzini's The Italians are relevant to this week's readings. (From THE ITALIANS by Luigi Barzini. Copyright © 1964 by Luigi Barzini. Reprinted by permission of Atheneum Publishers.)

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1. One of the paramount goals of science is to achieve repeatability of experimental findings. That is, successive investigators can arrive at similar conclusions. Can Benedict's approach be used in the same way? Can Codere's? Parker's?
2. Ruth Benedict considers that one of the advantages that anthropologists gain by studying small cultures is that their objects of study are simpler and more homogeneous than are advanced civilizations. After the various readings on the Kwakiutl do you feel that that is a valid point?
3. How can scientists differ about the Kwakiutl as much as they do? What prevents acquiring the data to settle the issue?
4. Would you make any prediction about the amount of interest Kwakiutl myths would show in matters of cooperation and conflict, power and subordination?
5. What is Parker's underlying assumption about the relations between child training and adult behavior? Do Benedict and Codere agree?
6. Parker presents a view about the way institutions serve to permit expression of severely inhibited impulses, and illustrates it among the Kwakiutl. Can you think of ways in which politics in our own society permits people to express in institutionally approved forms personal impulses that our culture represses strongly?
7. How ancient was Kwakiutl culture? What changes are you aware of? Are these changes in personality or institution? How do these interact?
8. What are your reactions to Parker's attempt at integration of the Benedict and Codere views of the Kwakiutl?
9. Both Benedict and Banfield deal with cultures radically different from our own. Ruth Benedict comments specifically on cultural diversity as follows:

   > "The truth of the matter is rather that the possible human institutions and motives are legion, on every plane of cultural simplicity or complexity, and that wisdom consists in a greatly increased tolerance toward their divergencies. No man can thoroughly participate in any culture unless he has been brought up and has lived according to its forms, but he can grant to other cultures the same significance to their participants which he recognizes in his own." (p. 45, Mentor edition, p. 37, Sentry edition)

   What then can justify the focus of this course on "planned, rapid, progressive change" (17.01 Student Memorandum No. 4) especially in societies other than our own? Quite simply, "Who are we to tell others how to organize their lives?"

10. Benedict defends the study of primitive cultures partly because "...modern civilization has grown too complex for adequate analysis except as it is broken up for the purpose into small artificial sections. And these partial analyses are inadequate..." (p. 30, Mentor edition, pp. 17-18, Sentry edition). Yet Banfield does deal with a "partial analysis"--a single village in Southern Italy. Is his analysis "inadequate"? If so, in what respects?

11. A central focus of Banfield's study is the need to "...concert the behavior of large numbers of people in matters of public concern" (p. 7). Benedict shows, however, that the Zuni do achieve a high degree of social organization in performing "staggering" rituals and ceremonies. (See especially pp. 64-65, Mentor edition, pp. 59-61 Sentry edition.) Is Zuni society, therefore, "highly developed" and not "primitive"? How can you defend Banfield's notion that developing the ability to concert behavior of large numbers of people in matters of public concern is part of the process of modernization?

12. In The Wealth of Nations, which will be read later in the course, Adam Smith suggests that an individual's pursuit of selfish advantage works through an "invisible hand" to the advantage of the society as a whole. Doesn't this contradict Banfield's conclusions as to the conseouences of amoral familism?

13. The concept of amoral familism rests on the concept of advantage. How would you define "personal advantage"? Were the Kwakiutl maximizing their "advantage" by destroying their property? Isn't the basis of the American society and economy the maximization of personal advantage?

14. The second part of this course deals with the "Rational Model" of man. If the Montegrano peasant cannot improve himself because of the oppressive conditions in his village (see p. 65) and if he cannot move to the city (see p. 58), isn't amoral familism the most "rational" form of behavior?

15. Banfield stresses that the inhabitant of a capricious world is not likely to save, invest, or act in concert (see p. 114). Is the world of the Zuni or Kwakiutl any less capricious than that of Montegrano?

16. If you were an American Peace Corps Volunteer assigned to Montegrano, what program would you institute to facilitate change? Is the situation in Montegrano hopeless?

17. What is a TAT? How is it scored?

18. What needs would you expect to show up in Kwakiutl TAT's?

19. What is a sample? Why is "representativeness" a virtue? (See pp. 10-11.)

20. Given that Banfield studies but a "single village," how does he do that? On what bases does he draw his conclusions? Are these techniques adequate to support his hypotheses about Montegrano? About Southern Italy? About less developed countries in general?

21. Banfield ends his study with the thought that: "Nations do not remake themselves in fundamental ways by deliberate intention any more than do villages" (p. 175). Do you agree or disagree? What examples can you cite from history which confirm or refute this notion? If Banfield is correct, does the entire focus of this course become meaningless?

Reading Guide. Week of February 20, 1968

I. The Life of Man in a Changing Society: Industrialization and Human Behavior

B. The Transition to Industrial Society

Required Readings:

Lerner, Daniel, The Passing of Traditional Society, Chapter 1, pp. 79-86 in Chapter 3. (Library, Free Press, 1958, 1964)

Weber, Max, The Protestant Ethic and the Spirit of Capitalism, pp. 1-11, 17-22, 35-40, 42-43, 47-61 top, 63 bottom-69, 98-107 top, 109 bottom-117, 155-164 top. (To be bought, Scribner's, 1958, $1.45.)

Discretionary Readings: (Some of which the instructor may wish to assign)

Lerner, Daniel, The Passing of Traditional Society, Chapter 2.

Millikan, Max and Blackmer, D., The Emerging Nations, pp. 3-26. (Available in paperback, Little, Brown, 1961, $2.50.)

Something on the Industrial Revolution, e.g.,

Ashton, Thomas, The Industrial Revolution, pp. 23-79. (Available in paperback, Galaxy, $1.25; Oxford, 1961.)

Clough, Shepard, The Economic Development of Western Civilization, pp. 160-185, 235-258. (McGraw-Hill, 1959)

Heilbroner, Robert, The Making of Economic Society, pp. 29-88. (Prentice-Hall, 1962)

Klemm, Friedrich, A History of Western Technology, pp. 269-289. (Allen and Unwin, 1959; M.I.T. Press, 1964)

Optional Readings:

Lambert, Richard, "The Social and Psychological Determinants of Savings and Investments in Developing Societies," in Industrialization and Society, ed. by B.F. Hoselitz and W.E. Moore, pp. 116-130. (UNESCO-Mouton, 1963)

Nef, John U., War and Human Progress, Chapter 15. (Harvard University Press, 1950)

Polanyi, Karl, The Great Transformation. (Available in paperback, Beacon, $1.45.)

Rostow, W.W., The Stages of Economic Growth. (Available in paperback, Cambridge University Press, $1.45.)

Sombart, "Capitalism," in The Encyclopedia of the Social Sciences

Samuelsson, Kurt, Religion and Economic Action. (Available in paperback, Torchbook, $1.45.)

Tawney, R.H., Religion and the Rise of Capitalism. (Available in paperback, Mentor, $.50.)

Cole, W.A. and Deane, Phyllis, "The Growth of National Incomes" in The Cambridge Economic History of Europe, Vol. 6, The Industrial Revolution and After, ed. by H.J. Habakkuk and M. Postan. (Cambridge, 1965)

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1. How did the way in which change came about in Balgat compare and contrast with the process of change which Weber describes?
2. What do you take to be the significance of the grocer's attitudes for the process of change in Balgat?

3. Does the grocer seem to have the "spirit of capitalism"? Does the chief have it? Or perhaps the chief's sons? Does the chief's fixation with his family make him an "amoral familist"?

4. Do the descriptions of Balgat (in 1950) and Montegrano leave the impression that these are places with similar characteristics? What would Benedict have to say about this? Would Weber and/or McClelland agree?

5. How does Weber define capitalism? What seem to be the criteria which Weber derives for distinguishing between modern Western Capitalism and previous forms of capitalism or of similar economic organization? Does his description of the capitalist ethic apply to present day capitalists?

6. Is Weber's explanation of the reasons for the rise of modern capitalism a general theory or is it an ad hoc explanation of a unique event? Compare Weber on this point with Benedict and Banfield. With what writer do you think Weber was taking issue?

7. How does Weber characterize the pre-industrial economic order? Does he presume this to be valid throughout the world? From where does he draw his data? How do the pre-industrial societies he considers differ from the ones which Benedict describes; which Banfield describes?

8. Can you give a schematic presentation of Weber's thesis as to how the transition from the pre-modern to the modern economic order came about--that is, can you trace the steps in economic development which Weber visualizes?

9. What sorts of evidence does Weber use to support his interpretation? Do you think that Weber presents a compelling argument?

10. What does Weber mean by his concept of a "calling"? What part does this play in social change?

11. How would Weber handle the negative cases to his thesis--i.e., what would he say about the fact that there were some successful businessmen who were Catholics and some Protestants who chose more quiescent occupations?

12. A critical point in Weber's thesis is his speculation about the motivations of the Calvinist businessman. Why is it that the Calvinist turns to business and does so well at it? Are you able to shed any more light on the problem by using the insights and empirical evidence presented by McClelland?

13. What was the Calvinist doctrine of predestination? Why does a person who feels that his salvation or damnation is predestined try hard to succeed?

14. The Industrial Revolution in England is generally dated from roughly 1780 on. The main events of the Reformation and the spread of Protestantism took place in the sixteenth and seventeenth centuries. Do you think that this time gap poses any difficulties for Weber's argument? What was happening in the intervening 100 to 200 years which would be of interest to Weber?

15. What are the so-called "Puritan virtues"?

Reading Guide. Week of March 5, 1968

I. The Life of Man in a Changing Society: Industrialization and Human Behavior

B. The Transition to Industrial Society

Required Readings:

McClelland, David, "The Impulse to Modernization" (Chapter 2, pp. 28-39) in Modernization, Myron Weiner, editor. (To be reproduced; Basic Books, 1966.)

________, The Achieving Society, pp. 8-19, 36-61, 70-74, 89-93. (Library and rental set, Van Nostrand, 1961; available in paper, Free Press, 1967, $2.95.)

Optional Readings:

Hagen, Everett, "How Economic Growth Begins: A General Theory Applied to Japan," in Public Opinion Quarterly, Vol. 22 (1958-59), pp. 373-390.

________, On the Theory of Social Change. (Dorsey Press, 1962)

Hirschman, Albert O., The Strategy of Economic Development, Chapter 1. (Available in paperback, Yale University Press, 1958, $1.45.)

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1. Is the ambition of a conqueror an example of what McClelland calls the "need to achieve"? Is the craving of an entertainer or of a politician for a big audience an example of the "need to achieve"? If not, why not?

2. That there are some statistical differences between societies in the frequency distribution of persons with different psychological needs no one would question. Critics of McClelland (and of psychological explanations of historical events) argue, however, that there are always enough people around of any given personality type to take the lead in a particular direction if conditions, traditions, and incentives are adequate. The fact that the relatively few entrepreneurs in a society have high *n* Ach does not prove that increasing the number of people with high *n* Ach will increase the number of entrepreneurs. What evidence, if any, does McClelland offer that shortage of people with high *n* Ach is the critical bottleneck to economic development? Evaluate the evidence.

3. McClelland discusses the relation of his theory of economic growth to Weber's. Does he conclude that they agree or disagree? How do they relate? Now try the same exercise with McClelland and Banfield. How far do they agree and how do their theories relate? What about McClelland and Benedict?

4. If such personality traits as high need for achievement account for the rate of growth of a society, then how do you account for rapid changes such as the rise of Florentine commerce in the renaissance and its subsequent decline? Do culturally-shaped personalities change that rapidly?

5. What was Winterbottom's finding (p. 46)? What significance does it have for McClelland's theory and for practical proposals for stimulating entrepreneurial achievement?

6. How would McClelland describe or characterize the grocer of Balgat? How does your view of the significance of the grocer in the process of change in Balgat reflect upon McClelland's view of how economic development occurs?

7. What explanation of economic development dominates the thinking of most economists according to McClelland? (See pp. 8-15.) Later on in the course you may wish to consider whether you agree.

8. Benedict seems to feel that there are an indefinite number of different kinds of pre-industrial societies resembling each other in no way other than in being unindustrialized. McClelland, Parsons (see McClelland, pp. 16-17), and others seem to think that pre-industrial societies have certain uniform features. What are these? How does the evidence strike you? Where would Banfield stand? Lerner? Weber?

9. McClelland says that "actual achievement cannot be considered a safe index of the...*need* to achieve..." (p. 39). Discuss. How is the need to achieve measured?

10. What is a coefficient of correlation? How is it expressed?

11. What is a test of significance?

12. What are the traits of the high achiever? How does he react to risk, money?

13. What other psychological needs are recognized in the need system McClelland uses? What significance do they have?

Reading Guide. Week of March 12, 1968

I. The Life of Man in a Changing Society: Industrialization and Human Behavior

C. The Diffusion of Innovations

Required Readings:

Rogers, Everett, Diffusion of Innovations, pp. 7-12, 57-62, 81-86, 208, 232-243. (Library, Free Press, 1962)

Coleman, James, Katz, E. and Menzel, H., "The Diffusion of an Innovation among Physicians," in Sociometry, Vol. 20 (1957), pp. 253-262. (To be bought, Bobbs-Merrill Reprint, $.25.)

Menzel, Herbert, and Katz, E., "Social Relations and Innovation in the Medical Profession: The Epidemiology of a New Drug," in Maccoby, Newcomb, and Hartley, Readings in Social Psychology, pp. 532-545. (Library and rental set, H. Holt, 1958, third edition; also in Public Opinion Quarterly (Winter 1955-56), pp. 337-352.)

Optional Readings:

Rogers, Everett, Diffusion of Innovations, pp. 1-3, 4-6, 13-20, 98-111, 152-159, 171-185, 199-205, 243-247, 254-284, 311-314.

Rapoport, Anatol, and von Bertalanffy, L., General Systems (Yearbook of the Society for the Advancement of General Systems Theory) Vol. 1 (1956), pp. 48-55, "The Diffusion Problem in Mass Behavior" by A. Rapoport.

Karlsson, Georg, Social Mechanisms, pp. 18-55. (Free Press, 1958)

Review of Studies in the Flow of Information among Scientists, Vol. 1 (Text) and Vol. 2 (Tables). (Bureau of Applied Social Research, Columbia University, 1960)

Schramm, Wilbur, ed., The Science of Human Communication, Chapters 6-8. (Basic Books, 1963)

Menzel, Herbert, The Flow of Information among Scientists; Problems, Opportunities, and Research Questions. (Bureau of Applied Social Research, Columbia University, May 1958)

Katz, E., and Lazarsfeld, P., Personal Influence, pp. 149-161, 219-246, 271-295. (Free Press, 1955)

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1. Compare the Rogers-Coleman model of diffusion of an innovation with the model that would represent the spread of an epidemic. What is implied by a logistic growth curve?
2. Summarize: the stages of adoption; the types of adopters; the behavior of different adopter types at different stages.
3. What is a sociogram? Is there a unique solution to the decomposition of a sociogram into cliques? Can you think of ways to define sociometric relations rigorously? Can you think of any formally analogous problems in other sciences?
4. What psychological characteristics would you expect to be associated with readiness to adopt innovations? Consider what McClelland, Weber, Lerner, Banfield have to say about this. Do their hypotheses fit the empirical findings of Rogers, Coleman, Menzel, and Katz?
5. How far and in what respects do the same theories about human behavior in regard to innovation fit both primitive peasants and American M.D.'s? In what respects do they differ?

6. In sociological writings one often comes across the concept of the "marginal man." He may be defined as a person who has been part of two or more cultures and is therefore not fully integrated in either. Examples are immigrants, members of ethnic or religious minorities, or even persons who live outside their normal stratum such as a schoolteacher in a peasant village. What do Rogers, Menzel, et al. tell us about the role of marginal men as innovators and as diffusers of innovation?

7. Consider the significance of the difference between the innovator and the influential. Consider it in the light of the Southern "moderate." If someone wanted to change race relations in the South, could you tell him whether he would accomplish more if he innovated radically or if he trimmed his sails to win community respect? If you knew something about his age, occupation, social status, could you tell him better? If one were to suggest that it is a systems problem rather than an individual problem what would that mean?

8. Is there an innovator-influential distinction in science as well as in applied professions? Think of examples.

9. How did Coleman, Menzel, and Katz obtain their data?

10. What is an "opinion leader"? In what respects is the concept of "opinion leader" different from the ordinary concept of a political leader?

11. Obviously, opinion leaders are not entirely like their followers nor entirely different. What can you say about the respects in which an opinion leader is like or different from his followers?

Reading Guide. Week of March 19, 1968

II. Alternative Explanations of Why People Change

A. Looking at Social Change as Rational Behavior: Man as a Utility Maximizer--or Is He?

1. Empirical Studies of "Rational" Behavior

Required Readings:

Nair, Kusum, Blossoms in the Dust, pp. 27-31 and 46-49. (Library, F.A. Praeger, 1963)

Schultz, Theodore, Transforming Traditional Agriculture, pp. 36-37 middle and pp. 41-50 middle in Chapter 3 and pp. 162-168 bottom in Chap. 11. (Library)

Bauer, Raymond, Pool, I., and Dexter, L., American Business and Public Policy, pp. 127-138, 165-173, 192-195, 472-475. (Library and rental set, Atherton Press, 1963)

Simon, Herbert A., "Theories of Decision-Making in Economics and Behavioral Science," in The American Economic Review, Vol. XLIX (June, 1959). (Excerpts assigned will be reproduced.)

Mosteller, Frederick and Nogee, P., "An Experimental Measurement of Utility," in The Journal of Political Economy, Vol. 59 (October, 1951), pp. 371-386 and 399-404. (Pages assigned will be reproduced.)

Optional Readings:

Simon, Herbert A., "A Behavioral Model of Rational Choice," in Models of Man: Social and Rational, pp. 241-256. (Wiley and Sons, 1957)

Davidson, Donald, Suppes, P., and Siegel, S., Decision Making: An Experimental Approach. (Stanford University Press, 1957)

Savage, Leonard J., The Foundations of Statistics. (Wiley and Sons, 1954)

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1. Each of these readings illustrates how human behavior mixes rational calculation and non-rational considerations. Do they agree in what they say about the relation of these two things? If so, what is it?
2. Do rational-model and influence-model explanations contradict each other? Can they be reconciled? How?
3. In what respects is each model more powerful?
4. Does the rational model apply to Benjamin Franklin as Max Weber saw him? Is it involved in why Weber found Franklin particularly interesting?
5. What support does the general rational model of man find in the study of the tariff issue? Are there any phenomena reported in the study which cannot be explained in terms of some version of the rational model? If so, what are they?
6. Bauer, Pool, and Dexter note that the interests of business firmsare seldom coherent enough to make their "self-interest" a clear concept. What implications, if any, does this observation have for utility theory?
7. In other chapters (not assigned) they make the same point regarding the unclarity of the self-interest of trade associations and congressional constituencies. What implications does that fact have for political behavior?

8. Do Bauer, Pool, and Dexter adhere to the rational model, the influence model, neither or both?

9. What does Simon mean by "satisficing"? What is the point of introducing that concept?

10. What evidence supports Simon's revision of the maximizing model? What contradicts it?

11. Does any evidence presented in the Bauer, Pool, and Dexter reading tend to support or contradict Simon's revision of utility theory?

12. What is the significance of the Mosteller and Nogee experiment?

13. One fundamental assumption involved in the techniques of utility measurement is that there is a point of indifference between two alternative lotteries or bets. The indifference formula Mosteller and Nogee used in their experiment was $pU(A) + (1-p)U(C) = U(B)$. Using their technique of fixing the values of p, B and C to find a value for A, let us assume that $p = 0.50$, B = \$10,000 and C = \$0.00. Is there any value of A which would make the equation true for those preferences? Assume that $p = 0.90$. What value would you give to A for preferences under this condition?

14. Explain the principle of diminishing marginal utility. What evidence has been offered in your reading that it applies to money? What evidence has been offered that it does not? Faced with a conflict between experimental evidence and common sense, what conclusions do you draw? Why?

15. You will recall that McClelland reported experiments in which subjects high on need Achievement measures demonstrated a preference for certain ranges of risk. What are the implications, if any, of these experiments for the techniques of utility measurement? For the concept of utility? Did the Mosteller-Nogee experiment results agree with McClelland's point?

16. Mosteller and Nogee report (p. 379) that: "When questioned, the subjects stated that they felt their decisions were only slightly affected by those of the other subjects." What do you think about this statement? Can you find relevant material in other parts of the course upon which to base your reaction?

17. Do you think that the "investment session" in the Mosteller and Nogee experiment adequately controls for the possibility that gambling per se might have a utility value? Why? Does the von Neumann measure of utility allow for a utility of gambling?

18. Are there any results of the Mosteller and Nogee experiment which contradict the rational model of man? If so, what are they?

19. Mosteller and Nogee note (p. 386) that groups A and B of the experiment differed significantly on the low-probability, high-valued hands and that this difference must have been the result of running the subjects in a group rather than as individuals. Can you interpret this result? Is it consistent with a utility-theory model of behavior?

20. What evidence supports Mosteller and Nogee's conclusion that "the notion that people behave in such a way as to maximize their utility is not unreasonable?

Reading Guide. Week of April 2, 1968

II. Alternative Explanations of Why People Change

A. Looking at Social Change as Rational Behavior: Man as a Utility Maximizer--or Is He?

2. Some Examples of Theories of Rational Behavior

Required Readings:

Smith, Adam, Wealth of Nations, in Book I, Chapters 1 and 2 and first 6 paragraphs in Chapter 3; in Book IV, first 15 paragraphs in Chapter 2. (To be bought: either Selections in Appleton-Century-Crofts edition, $.45; or complete edition, Modern Library Giant, $2.95. The first 15 paragraphs of Chapter 2, Book IV are not in the Appleton edition and will be reproduced.)

Edwards, Ward, "The Theory of Decision Making," in Psychological Bulletin, Vol. 51, No. 4 (1954), pp. 380-385, 388, 389-392, 405-406, 407, 410-411. (The pages assigned will be reproduced.)

Marschak, Jacob, "Scaling of Utilities and Probability," in Game Theory and Related Approaches to Social Behavior, edited by Martin Shubik, pp. 95-103. (Library and rental set, Wiley and Sons, 1964)

Optional Readings:

Luce, R.D. and Raiffa, H., Games and Decisions, especially Chapter 2. (Wiley, 1958)

Gamson, W., "A Theory of Coalition Formation," in American Sociological Review, Vol. 26 (1961), pp. 373-379.

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1. How does Adam Smith visualize the transition from a pre-modern or traditional society and economy to a modern one?
2. When people talk of "economic man," what sort of principles are supposed to be the guidelines for such a man's action? What sort of model of man does Smith use in his analysis; is he "economic man"?
3. Do you think you could improve on Smith's argument by adding considerations regarding the individual entrepreneur such as Weber and McClelland discuss? What would be the cost of such complications?
4. Smith remarks in the first part of the reading (p. 3, Appleton edition, p. 5, Modern Library edition) that:

> "The division of labor, however, so far as it can be introduced, occasions, in every art, a proportionable increase of the productive powers of labor. The separation of different trades and employments from one another seems to have taken place in consequence of this advantage."

He later remarks (p. 10, Appleton edition, p. 13, Modern Library edition):

> "This division of labor...is not originally the effect of any human wisdom which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual, consequence of a certain propensity in human nature which has in view no such extensive utility: the propensity to truck, barter, and exchange one thing for another."

What sort of causal connection seems to be implied in the first statement? What causal sequence is implied in the second? Are these statements contradictory? What is the nature of the evidence for them? How could they be tested?

5. As Weber and others have pointed out, the propensity to truck, barter, and exchange was characteristic of men of the ancient world as well as of men of more recent history. Why then did the rapid expansion of productivity not occur earlier than it did?

6. Smith asserts (p. 424, Modern Library edition and reproduced section of Book IV) that "what is prudence in the conduct of every private family, can scarcely be folly in that of a great kingdom," and with an extension of this assertion he comes out strongly for free foreign trade. Is this argument valid? If yes, on what grounds? If not, what is wrong with it?

7. Explain the working of the "invisible hand." What is the evidence on which the argument is based?

8. Is the concept of utility as it has been used in your readings really open to calculations of gain and loss from any point of view (monetary gain, social status, physical well-being, sexual gratification, etc.) or does it seem to have a more restricted application?

9. Edwards notes two basic assumptions involved in the rational model of man--namely, that man maintains a weak ordering (transitive) of his preferences and that he seeks to maximize something. Does this summary apply to economic man as Adam Smith conceives him?

10. What is the principle of parsimony in scientific endeavor? Why does it seem to have such importance? Why did the application of this principle lead to the rejection of the classical concept of utility? What is wrong with the statement "John Doe chose X over Y because X had a higher utility to him"?

11. How did von Neumann and Morgenstern succeed in reestablishing a concept of utility? How does the concept as they used it differ from the classical notion? Is this in accord with the principle of parsimony?

12. What is the distinction between a cardinal scale and an ordinal scale? Why is a cardinal scale of utility so difficult to construct? What implication does this have for the rational model of man? What is meant by the phrase "unique up to a linear transformation"?

13. Edwards states that the minimax loss principle is a fundamental rule for decision making which is "sharply different from the rule of maximizing utility or expected utility" (p. 407). Why?

14. Explain the difference between decision making under certainty, risk, uncertainty. Give examples of each.

15. Can you understand the behavior of innovators or early adopters in terms of the minimax loss principle? Can you understand it in terms of the principle of maximization of utility or expected utility? Can you understand the behavior of the late majority and/or the laggards in these terms?

16. Does von Neumann's method of scaling utilities assume transitivity? Does it assume interpersonal comparability? To what sorts of decisions or preferences would it apply? Can it apply to social welfare without permitting interpersonal comparability?

17. How does the method of measurement which von Neumann suggests differ from the method applied in the Mosteller and Nogee experiment?

18. Herbert Simon suggests some revisions of the utility theory of decision making summarized by Edwards. What are the major points with respect to which Simon differs from the other forms of utility theory?

19. Can you describe the sort of economic actor which Simon's model envisions? Is he more or less rational than the "economic man" maximizing utility? On what grounds do you base your conclusions?

20. How does the account of the businessman given in the tariff study compare with the account which Adam Smith gives?

Reading Guide. Week of April 9, 1968

II. Alternative Explanations of Why People Change

B. Looking at Social Change Through the Stimulus-Response or Influence Model of Human Behavior

1. The Freudian View of Human Behavior (and especially the Freudian view of groups and leadership)

Required Readings:

Rickman, J., editor, A General Selection from the Works of Sigmund Freud, pp. 3-36, 169-193. (To be bought, Anchor, Doubleday, 1957, $1.45.)

Lasswell, Harold, Politics: Who Gets What, When, How, Chapter 8. (Library, Meridian, 1963)

Optional Readings:

Fenichel, Otto, The Psychoanalytic Theory of Neurosis, pp. 23-33, 129-167. (W.W. Norton, 1945)

Mednick and Mednick, Research in Personality, pp. 31-63. (Holt, Rinehart, and Winston, 1963)

Ruitenbeek, Hendrik M., Psychoanalysis and Social Science. (E.P. Dutton & Co., 1962; Everyman, $1.65)

Freud, S., Civilization and Its Discontents. (Norton, $1.95)

________, Group Psychology and the Analysis of the Ego, Chapters 1-8. (Bantam, $.50)

Mazlish, Bruce, Psychoanalysis and History. (Prentice-Hall, 1963; Spectrum, $2.25)

Erikson, Erik H., Childhood and Society. (W.W. Norton, 1950)

Cohen, Arthur, "Experimental Effects of Ego-Defense Preference on Inter-Personal Relations," pp. 380-385 in Personality and Social Systems, Neil Smelser and William Smelser, editors. (Wiley, 1963)

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1. What is the evidence or data from which Freud builds his theories of personality? How is it acquired? How could the theories be tested?

2. Do you think his theories might be more convincing if they drew more on interpretations of "normal" psychology? Do you see any problems researchers might have in gathering such data?

3. The rational model of man as a calculating maximizer is contrasted in our course with an influence model. The latter is often said to deal with man's irrational behavior. Do you consider that Freud may be said to deal with the rational or irrational aspects of man? What model does he use? Does his model perceive human behavior as purposively seeking to maximize anything? If so, how does his approach differ from that of the utility theorists?

4. Freud says: "...the psychoanalyst is distinguished by an especially strong belief in the determination of psychic life. For him there is in the expression of the psyche nothing trifling, nothing arbitrary and nothing lawless..." (p. 22). Do you agree that every statement we make, every action we take is deeply rooted to an underlying consistency of purpose in our personalities? Do we never act out of character? May not we act purely by chance?

5. According to Freud's theories, which kind of defense mechanism is a more efficient one, sublimation or reaction formation?

6. Would you say Benedict and Freud both approach their subject of study with the notion that some inner logic is the key to understanding the behavior of both cultures and personalities?

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> "Ford characterized the Kwakiutl as *essentially cooperative and peaceful*. He viewed their 'atrocious' aspects as institutionalized reactions to the restraints imposed by the requirements of a communalistic social structure.
>
> "In this discussion Ford seems to have tacitly assumed a fixed... quantum of aggressive energy that cannot be expressed directly in Kwakiutl society. As a result it 'spills over' into oblique channels and ceremonials." (p. 135)

This quotation is from the Parker article in your first week's reading. Can you now recognize what theory Ford (and Parker too) were using in their analysis? Restate the quotation using the terms "reaction formation," "repression," and "libido."

8. Does Freud's analysis suggest anything about the possible genesis of the motivations of Calvinist entrepreneurs as described by Weber, of high or low n-achievers as described by McClelland?

9. What do Freud's ideas tell us about the inner cohesiveness of groups and their tendency to be intolerant toward non-members?

10. Does Ford's comment on the consequences of a "communalistic social structure" imply communist and other utopian efforts toward a more harmonious society are bound to achieve the opposite? Does Freud's essay on *Group Psychology* seem to support the same conclusions?

11. Why is it that Freud argues: "...from the very first, Individual Psychology is at the same time Social Psychology..." (p. 170)? Do you agree with this view?

12. Does Lasswell's analysis of Lincoln imply that Lincoln was not normal? Would a Freudian analysis of any person sound less strange?

13. What is Lasswell's evidence for Lincoln's personality structure? Without having had him on a psychoanalytic couch, how can he analyze him?

14. If political leaders are unconsciously motivated to act out their personal needs in the political arena, does not that reduce their political effectiveness?

Reading Guide. Week of April 23, 1968

II. Alternative Explanations of Why People Change

B. Looking at Social Change Through the Stimulus-Response or Influence Model of Human Behavior

2. Human Behavior in Primary Groups

Required Readings:

Asch, Solomon, "Opinions and Social Pressure," Reprint from Scientific American (November 1955). (To be bought, $.45.)

Broom, Leonard and Selznick, P., Sociology, pp. 135-150. (Library and rental set, Harper and Row, 1963, third edition)

Maccoby, E., Newcomb, T., and Hartley, E., editors, Readings in Social Psychology, pp. 583-587 ("Group Factors in Worker Productivity" by George Homans) and pp. 522-532 ("Group Leadership and Institutionalization" by Ferenc Merei). (Library and rental set, H. Holt and Co., 1958, third edition)

Optional Readings:

Roethlingsberger, F.J. and Dickson, W.J., Management and the Worker. (Describes the Hawthorne study. Harvard University Press, 1939)

Shils, Edward and Janowitz, Morris, "Cohesion and Disintegration in the Wehrmacht," in Public Opinion Quarterly (Summer 1948), pp. 280-315; also in Broom and Selznick, Sociology, pp. 156-163 (adaptation).

Sherif, Muzafer, "Group Influences upon the Formation of Norms and Attitudes," in Maccoby, Newcomb, and Hartley, Readings in Social Psychology, pp. 219-232.

Lippitt, Ronald and White, R.K., "An Experimental Study of Leadership and Group Life," in Maccoby, et al., Readings in Social Psychology, pp. 496-510.

Haythorn, William, "The Effects of Varying Compositions of Authoritarian and Equalitarian Leaders and Followers," in Maccoby, et al., Readings in Social Psychology, pp. 511-521.

Bales, Robert F., "Task Roles and Social Roles in Problem-solving Groups," in Maccoby, et al., Readings in Social Psychology, pp. 437-446.

Schachter, Stanley, "Deviation, Rejection, and Communication," in Journal of Abnormal and Social Psychology (1951), pp. 190-207.

Hollander, E.P., "Competence and Conformity in the Acceptance of Influence," in Journal of Abnormal and Social Psychology (1960), pp. 365 ff.

Verba, Sidney, Small Groups and Political Behavior--A Study of Leadership. (Princeton University Press, 1961)

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1. The course has been considering two basic models of human behavior--the model entailed by utility theory, and the model emerging from the study of social influence. Do the results of the Asch experiments fit one or the other of these models or both?
2. How?
3. Why do you suppose some subjects were upset in the Asch experiments by the fact that they allowed their responses to be influenced by the majority? Why were some subjects not upset at being influenced (sometimes even unaware of it)?

4. Can you form a hypothesis as to how Weber's Protestant businessman would react to the Asch experiment? Can you hypothesize how a subject with high need achievement would react?

5. Does a comparison of the experiments performed by Mosteller and Nogee and those performed by Asch suggest to you any differences between the utility model and the influence model?

6. Can you survey the evidence supporting the utility theory and social influence models of man respectively? Are there some phenomena of human behavior which both models seek to explain?

7. Which of these two models does Ruth Benedict use? What about Banfield, where would he stand?

8. How do you account for the difference in results in the Bank Wiring Room and in the Telephone Relay Room?

9. What differences are there in the method of observation and experimentation between the Mosteller-Nogee, Asch, Merei, and Hawthorne studies? How do all of these differ from the methods of McClelland and Banfield?

10. Is it meaningful to say "the leader is more important than the culture" or the "culture is more important than the leader"? What does it mean? Can you operationalize the meaning? Relate these statements to the great man theory of history.

11. Is telephone relay assembly or bank wiring a calling in Weber's sense?

12. Was there (as Freud suggests there might be) a leader with whom identification took place in the formation of the Hawthorne factory groups? If not, what was the difference?

13. What is meant by "the Hawthorne effect"?

14. Is the Merei experiment applicable to adult behavior?

Reading Guide. Week of April 30, 1968

II. Alternative Explanations of Why People Change

B. Looking at Social Change Through the Stimulus-Response or Influence Model of Human Behavior

3. The Psychology of Persuasion

Required Readings:

Brown, Roger, Galanter, E., Hess, E., and Mandler, G., *New Directions in Psychology*, pp. 3-20, 44-82. (Library and rental set; Holt, Rinehart and Winston, 1962)

Optional Readings:

Hovland, Carl, Lumsdaine, A., and Sheffield, F., *Experiments on Mass Communication,* Chapters 7, 8. (Princeton University Press, 1949)

Abelson, Robert P. and Rosenberg, M., "Symbolic Psycho-Logic: A Model of Attitudinal Cognition," in *Behavioral Science*, Volume 3, No. 1 (January 1958).

Hovland, Carl, Janis, I., and Kelley, H., *Communication and Persuasion*, Chapters 5-7. (Yale University Press, 1953)

Brown, Roger, *et al.*, *New Directions in Psychology*, pp. 20-43.

1.

> "The pre-requisites for an 'approach-avoidance' conflict are eminently fulfilled by the strong concomitant negative and positive conditioning of aggressive behavior in Kwakiutl society." (Parker, p. 141)

What implications does Parker draw for Kwakiutl personality development from the particular form of conflict that occurs? What kinds of personality consequences might a preponderance of approach-approach or avoidance-avoidance conflicts have?

2. Can you think of any experiment or other situation where any one of the three models Brown describes would make a different prediction from any other of the models? (There are some.) In other words, can you design a critical experiment to choose which model fits when?

3. If John likes Picasso and Tom likes Picasso, how should this incline John to feel about Tom according to balance theory?

4. If John likes Mary and Tom likes Mary, how should this incline John to feel about Tom? What is the difference between Mary and Picasso? Comment on the relevance to balance theory.

5. Apply dissonance theory to how each of the following feel about the war in Viet Nam: Lyndon Johnson, a marine there, a student teach-in leader.

6. Mrs. Keech's movement became a proselytizing movement after its defeat. What distinguishes the conditions for that reaction from that of say the Nazis', who mostly disappeared after their defeat? Do movements generally thrive on victory or defeat? What distinguishes the Keech situation?

. As Max Weber points out, "One may...rationalize life from fundamentally different basic points of view and in very different directions" (*The Protestant Ethic and the Spirit of Capitalism*, pp. 77-78). The concept of utility has the characteristic that it remains open to any of these fundamentally different basic points of view. The fundamental principle which underlies the rational model of man based on utility is the principle of consistency of preference which allows for utility calculations. A similar principle of consistency of attitudes (and behavior) underlies the balance models which Brown describes. This seems to present a basic affinity between the balance models and utility theory, and yet the purpose of the balance models is to explicate the operations of influence. Are the two models the course has been examining fundamentally the same? If not, what at this point seem to be the critical differences?

8. Recalling Max Weber's account of the spirit and motives of the Calvinist businessman, can you approach this question from the point of view of the cognitive balance models which Brown presents?

9. Do you think that the psychological experiments described by Asch, Homans, Merei, and Brown contribute in definite ways to your understanding of the process of social change developed earlier in the course? Do you have any difficulty applying these results to the events of social change?

10. Can the balance models Brown describes explain the behavior of Asch's subjects who were not influenced by the majority? Can these models explain why some of the subjects who were influenced were emotionally upset? Can they explain the behavior of those subjects who were influenced and yet were not disturbed by the fact? Does this indicate to you a strength or a weakness of these models?

Reading Guide. Week of May 7, 1968

II. Alternative Explanations of Why People Change

B. Looking at Social Change Through the Stimulus-Response or Influence Model of Human Behavior

4. A Case Study of Persuasion: Election Campaigns

Required Readings:

Berelson, Bernard, Lazarsfeld, P., and McPhee, W., Voting, pp. vii-viii, 88-149, 215-233, 305-323. (Library and rental set, University of Chicago Press, 1954 ; **also available in paperback, Univ. of Chicago, $2.95)**

Optional Readings:

Lipset, S.M., Political Man. The Social Bases of Politics, pp. 1-16. (Anchor Books, 1963, $1.45)

Polsby, Nelson and Wildavsky, Aaron, Presidential Elections: Strategies of American Electoral Politics, pp. 102-131. (Scribner's, 1964)

Campbell, Angus, Converse, P., Miller, W., and Stokes, D., The American Voter. (Wiley, 1960; abridgement available in paperback, $2.95.)

Key, Valdimer O., Jr., Public Opinion and American Democracy, pp. 432-480. (Alfred A. Knopf, 1961)

Lubell, Samuel, Revolt of the Moderates. (Harper, 1956)

________, The Future of American Politics. (Available in paperback, Anchor, 1956, $.95.)

Greenstein, Fred I., The American Party System and the American People. (Available in paperback, Prentice-Hall, 1963, $1.50.)

Levin, Murray B., The Compleat Politician, pp. 131 ff. (Available in paperback, Bobbs-Merrill Co., 1962, $1.95.)

Key, V.O., American State Politics: An Introduction. (Knopf, 1956)

O'Connor, Edwin, The Last Hurrah. (Bantam, $.60)

Fein, Leonard J., ed., American Democracy: Essays on Image and Realities, pp. 16-72, 123-130, 187-234. (Available in paperback, Holt, Rinehart, and Winston, 1964, $2.65.)

Schramm, Wilbur, ed., The Science of Human Communication, Chapter 10. (Basic Books, 1963)

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1. In this study of voting behavior, the authors generalize from conditions in Elmira, New York, to the American democratic system as a whole. How valid is this approach? Is Benedict's caveat on the dangers of "partial analysis" applicable here? In what ways?

2. Similarly, Benedict's thoughts on "partial analysis" would be applicable to Voting on another level. Of all the attitudes and behaviors of the citizens of Elmira, only those related to the act of voting have been examined. Have these "related" attitudes been sufficiently identified and examined by the authors? Is such a "partial" approach legitimate?

3. What would Freud think of the authors' analyses and explanations of voting behavior? Why?

4. Are Freud's ideas about the inner cohesiveness of groups compatible with the findings of Berelson, Lazarsfeld, and McPhee?

5. Where does this study of voting behavior most nearly "fit" in a comparison with the two models of human behavior we have been considering in this course? What arguments would you use to support your opinions?

6. What arguments could you advance to support the assertion that the findings of Berelson, Lazarsfeld, and McPhee do, in fact, support the "rational" model of man as a utility maximizer?

7. What arguments from Voting could you advance to support the assertion that the utility model and the influence model are really two parts of one theory, i.e., two aspects of the same thing?

8. Much of the material in Voting has clear implications for the three models of attitude change described by Brown, Galanter, Hess, and Mandler. Can you identify some of the most salient examples from Voting? Could you diagram these examples in terms of each of the three models of attitude change and specify the parts of the model you found in Voting and the various methods used by the voters to reach equilibrium?

9. Cross-pressure is a kind of conflict. How would you expect its effects to differ depending on whether it is an approach-avoidance, approach-approach, or avoidance-avoidance conflict? Which is it likely to be?

10. Coleman, Menzel, and Katz deal with the concept of "opinion leader." What do Berelson, Lazarsfeld, and McPhee have to say about opinion leadership and voting? Do the views of these authors coincide or conflict? How?

11. Bauer, Pool, and Dexter deal with voting on the part of Congressmen while Berelson, Lazarsfeld, and McPhee deal with voting by the general population. What similarities and/or differences in voting are demonstrated by these two groups?

12. In your readings of Adam Smith, the concept of the division of labor was introduced. What types of division of labor in American political life are introduced by the authors of Voting? Do they contradict or complement Smith? In which ways?

13. The authors advance the following five factors which they consider prerequisites for the survival of political democracy:

    a. Limitation on the intensity of conflict
    b. Restrained rate of change
    c. Maintenance of stability in the social and economic structure
    d. Existence of a pluralistic social organization
    e. Existence of a basic consensus binding together the contending parties (p. 313)

    Do you consider these prerequisites conclusive? Sufficient? Superfluous? What additions or deletions would you make?

14. In which ways have the Zuni and Kwakiutl and the inhabitants of Montegrano and Balgat fulfilled these prerequisites for the survival of political democracy? Which requirements have not been fulfilled? Can you think of societies which fulfill all these prerequisites but do not have political democracy? Why not?

15. American foreign policy since World War II has stressed the development of political democracy in the non-Western world. Is it possible to have political democracy and "planned, rapid, progressive change" in these countries? In the United States? Why? So what?

16. Does the 1964 Presidential election campaign make more or less sense to you on the basis of the authors' findings?

17. From the Elmira study, it would seem that the majority political party would continually strengthen its position vis a vis the minority party, at least until all but the "hard core" minority members had switched allegiance to the majority. How then do you account for the fact that both major American political parties have won Presidential elections in recent years? Do the authors' findings suggest that the two party system is really an anachronism?

18. How did the findings and conclusions of Voting match your own preconceptions of the nature of the democratic process in the United States? Which of the findings seem most realistic, unrealistic? Why?

19. Berelson, Lazarsfeld, and McPhee see voting as primarily a social, i.e., a class and religious, phenomenon with the pre-election campaign producing "increasing polarization between dissimilar people and increasing homogeneity within similar ones" (pp. 144 and 146). What are the implications of this for the models of attitude change? For social harmony in the community? For utility theory? For influence theory?

20. On page 320, the authors of Voting make the point that political and social lines do not coincide in American society. What is the importance of this point? Can you illustrate from your knowledge of other societies what the effects of such a coincidence might be?

21. How would you defend or argue against the seeming paradox that a mass of "irrational" citizens can make "rational" choices or produce a "rational" community?

22. One of the most prevalent set of axioms in American culture has been those stressing "let your conscience be your guide." What does Voting seem to say about the strength of this axiom in twentieth century America? What other axiom(s) seem to be better supported by the evidence presented?

Reading Guide. Week of May 14, 1968

II. Alternative Explanations of Why People Change

B. Looking at Social Change Through the Stimulus-Response or Influence Model of Human Behavior

5 Psyche and Community: Political Leadership

Required Readings:

Weber, Max, "Politics as a Vocation," in From Max Weber: Essays in Sociology, pp. 77-96, 117-122, 127-128 (Galaxy edition); or pp. 1-21, 43-49, 53-55 in Politics as a Vocation (Facet Books, Social Ethics Series No. 3). (To be bought: either Galaxy edition, $2.25, or Facet edition, $.85.)

Optional Readings:

Lane, Robert, Political Life, Chapters IX and X (pp. 115-146). (Free Press, 1961)

Weber, Max, "Science as a Vocation," in From Max Weber: Essays in Sociology, pp. 129-158.

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1. The German word "Politik," here translated as "Politics," can equally well be translated as "policy"; it is one word in German. Review this essay thinking about its subject as "Policy as a Vocation." Does that help you understand it?
2. In The Protestant Ethic and the Spirit of Capitalism you read about the Calvinist notion of a "calling" (Beruf in the original German) and the significance of this concept in the behavior of Protestant entrepreneurs. In this week's Weber reading the same word, Beruf, happens to have been translated as "vocation." Does seeing calling and vocation as a single concept help you understand what Weber is saying? Review the contents of the present reading, thinking of its subject as "Politics as a Calling." How do the entrepreneurial and political vocations or callings differ and how do they resemble each other?
3. Incidentally, Weber wrote another essay (also printed in From Max Weber: Essays in Sociology) called "Science as a Vocation." What would you conclude about at least one of Weber's main scholarly interests? What do all three jobs, that of the entrepreneur, that of the politician, and that of the scientist have in common?
4. Weber's description of the politician (or of the entrepreneur, or scientist) is describable as the drawing of an "ideal type." (The term "ideal type" is Weber's own.) What does that mean? Does it mean that he is describing a good type of politician? If there are politicians who do not conform to Weber's ideal type does that invalidate his theory? Can describing an ideal type be a valid scientific procedure if the description is not disproved by the occurrence of instances that do not fit it?
5. How does Weber define the State?
6. What are the most powerful factors making people obey authorities, according to Weber? What main considerations lead people to regard such obedience to authority as proper?
7. Define each of the following words: mores, charisma, demagogue, bureaucracy, ethic of responsibility, absolute ethic, status honor, estate.

8. What is Weber's view of the role of the demagogue in a democratic society? How does this relate to Freud's view of the role of the leader in a group?

9. Consider whether there is any conflict between Berelson's picture of the relative ineffectiveness of mass media in an election campaign and the vital importance of primary group relations in it and Weber's view of the role of the political leader. Are these analyses compatible?

10. Use your readings on the Hawthorne, Asch, and Merei experiments, on diffusion of new ideas among doctors, and on the reasons for the failure of political organization in Montegrano to draw some conclusions about the ways in which political leadership and primary group processes interact or can interact.

11. In the social change you studied in your term paper what were or could have been the respective roles of primary group influence and political leadership?

12. Karl Marx described the capitalist organization of production as one in which the productive worker is separated from ownership of the means of production. In contrast to the sharecropping feudal peasant, he is a wage worker with no permanent ties to his equipment. What relation does this Marxian view have to Weber's analysis of modern government?

13. The following quotations state the central problem of Rousseau's classic essay, The Social Contract, 1762.

    > "I propose...to inquire whether the political order admits of an organizing principle that is both justifiable and conducive to stability....
    >
    > "The strongest--unless he transforms force into right and obedience into duty--is never strong enough to have his way all the time....
    >
    > "Let us agree, then, that might does not make right, and that we are obligated to obey only such powers as are legitimate. This brings us right back to my original problem."

    What does Weber have to say on the subject?

14. How does a democracy differ from an oligarchy in the way a politician lives for or from politics?

15. What kinds of government jobs in the U.S.A. are unpaid volunteer jobs? Why are they kept that way? What would happen if they were made paid jobs; who would prefer that, who would not? What would happen if Congressmen's salaries were raised to $50,000; cut to $5,000?

16. What is a "free profession"?

17. What part do lawyers play in American politics today? Why? What effect does their prevalence have?

18. Compare Weber's description of the popular demagogue with the American notion of a political boss.

19. "The management of politics through parties simply means management through interest groups" (p. 94, Galaxy edition; p. 19, Facet edition). Comment.

20. Is your image of a demagogue that of a passionate man who rants and raves or of someone "sine ira et studio." Consider the implications of any difference between your image and Weber's.

21. What is meant by the concept of "responsible" politics? Think of examples from your own knowledge of responsible and irresponsible politics.

22. By what criterion can one choose between an ethic of responsibility and an absolute ethic?

23. Consider all the conditions that have been suggested in this semester's reading as requirements for producing progressive, rapid change in a society: the prevalence of certain personality types or values (Banfield, McClelland); incentives (Smith, Simon); personal influence (Rogers, Coleman, Berelson); political leadership (Freud, Weber). How do you weight each of these, and how do they relate to each other?

24. Compare Weber's description of a political leader with Roger's description of an opinion leader. How do their personal and social traits differ?

25. How does Lincoln, as Lasswell describes him, fit Weber's description of an ideal type political leader?

26. On what kind of empirical evidence does Weber rely for arriving at and supporting his conclusions? How does he obtain that evidence?

APPENDIX B

CRISISCOM IN THE CLASSROOM

G. Matthew Bonham
M.I.T.

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CRISISCOM IN THE CLASSROOM[1]

INTRODUCTION

Crisiscom, a computer simulation of information processing by decision makers in an international crisis is applied to the study of the classroom. Instead of national decision makers, the study focuses on sophomores taking a social science course at M.I.T. Questionnaires and other techniques are used to get the initial values for the simulation model, and the model's predictions are compared to the observed information-processing behavior of the students.

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[1] We have made use of the computer time sharing system of Project MAC, an M.I.T. research project sponsored by the Advanced Research Project Agency, Department of Defense, under the Office of Naval Research, contract Nonr. -4102(01). The Crisiscom simulation program was supported by the Naval Research Laboratory under a contract to the Simulmatics Corporation and by the Advanced Research Projects Agency of the Department of Defense under Contract 920F-9717 with the Center for International Studies, M.I.T. This contract is monitored by the Air Force Office of Scientific Research.

The Crisiscom Model in Sketchy Form

Crisiscom is a computer simulation of the processes of attention, forgetting, and perception by human decision makers in an international crisis. The decision makers, who are represented in the stored computer programs, receive information about the world from various sources. In most cases the volume of "news" they receive is too large for them to pay attention to all of it; much "goes in one ear and out the other." Even the information that makes an initial impression on the decision makers is subject to forgetting. Some of it, however, does get through; it is this information that affects the way the decision makers view the other nations in the world.

The Crisiscom Model Somewhat Elaborated

The input for Crisiscom consists of a large number of messages about the world situation. Associated with each message sent to a decision maker is an initial salience value (SALDM). This value reflects the importance of the message to the decision maker. The SALDM is modified by the computer on the basis of three psychological principles:

1. People pay less attention to facts that contradict their views.
2. People pay more attention to news from a trusted, liked source.
3. People pay more attention to facts that they will have to act on or discuss because of attention by others.[2]

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[2] See Ithiel de Sola Pool and Allan Kessler, "The Kaiser, the Tsar, and the Computer: Information Processing in a Crisis," The American Behavioral Scientist, May 1, 1965, Vol. VIII, pp. 34-36, for a discussion of the principles.

These principles have been programmed into the simulation, and they are the heart of the model. After the SALDM of each message has been adjusted to account for the three factors, it is subjected to salience decay. The new salience values of the messages are reduced by a given amount, and the messages with values below a certain threshold are removed from the decision maker's attention.

In addition to the salience values, messages are associated with values representing the affect--the attitudes and feelings--existing between the countries refered to in the messages. If a message has an affect value that differs from the way a decision maker perceives these nations, his perception may change: The message may cause the decision maker to perceive them as being more or less friendly.

An Application to Classroom Learning.

Although Crisiscom was designed to simulate the behavior of national decision makers, it has a wide variety of potential applications. The principles of selective attention are applicable to many human information processing situations. The forgetting curve used in Crisiscom is an expontential decay function taken from studies of learning. Likewise, the notion that one's attitudes can be modified by new information is a general principle from social psychology.

In this report we will describe an application of Crisiscom to a situation that appears to be very different from international crises--the classroom. In the classroom, nevertheless, students do process a large number of "messages." Let us push the analogy further. Students receive information from the teacher; some of it is attended to, while other information is ignored. Usually students make notes on the messages that seem to be the most important. However, even this information is often forgotten and has to be relearned for the examination. Occasionally, the material students learn has an impact on their attitudes; it may change their affect toward the subject or even their view of the world. In short, Crisiscom seems to be applicable to the study of human information processing, from international politics to the classroom.

Summary of the Procedure

The study was carried out in the fall of 1964, using students from 14.003, a one-semester social science course for sophomores at M.I.T. The students met one day a week in a large hall to hear lectures given by various members of the Department of Economics and Social Science staff. Each lecturer usually covered material related to his area of specialization. In addition to the lectures, students attended weekly two-hour seminars, directed by a staff member, to discuss the lectures and the outside reading.

Data for the Crisiscom model were collected during the first part of the course. From 5 to 7 messages were selected from each of the first six lectures. The messages were social science concepts that were discussed during the lecture.

After the six lectures, data necessary for the salience-bias and salience-decay routines of Crisiscom were obtained. No effort was made to get data on affect, although this could easily have been done. In addition, the students were tested to determine the actual salience of the messages after the series of six lectures. The Crisiscom model was then run, and its predictionswere compared to the observed salience data.

In the following sections of this report, we will elaborate Crisiscom in more detail, discuss its application to classroom, describe the methods of data collection, and report the findings of the study.

THE CRISISCOM MODEL MORE FULLY ELABORATED

In this description of Crisiscom we will focus on the parts of the model that are especially relevant for our classroom study. First, the input for Crisiscom will be described. Second, we will trace the flow chart for the salience-bias routine, the part of the program that uses the three psychological propositions to determine the final salience of each message. Finally, we will briefly describe the salience-decay routine.

Crisiscom Input

Decision makers in Crisiscom are concerned with events that occur in their world. In a simulation of the outbreak of World War I, for example, events included Austria's ultimatum to Serbia, Russia's alliance with Serbia, and Italy's noncommitment. An event serves as a category or topic for organizing the messages that a decision maker receives. Incoming messages are associated with corresponding events. The events, along with the related messages, are part of the input for Crisiscom.

Salience and affect values for each message must also be fed into the computer model. At present the researcher supplies the following values for each message:

SALDM--The salience (on a scale of 0 to +1) of the message for one decision maker, DM(J).

ASOUR--The DM's attitude (on a scale of -1 to +1) toward the message source, i.e., the person who sent the message.

SALOTH--The salience (0 to +1) of the message for another decision maker, DM(K).

SLCONE--The salience (0 to +1) of the relationship between Country One and Country Two (REL) for Country One.

SLCTWO--The salience (0 to +1) of the REL for Country Two.

SALPOJ--The salience (0 to +1) of the message for the DM(J)'s public opinion.

SALPOK--The salience (0 to +1) of the message for DM(K)'s public opinion.

AFFT--The affect (-1 to +1) of the REL.

You will note that the researcher must supply values representing the salience of the message for two decision makers, DM(J) and DM(K). In the present program the cognitive systems of only these two decision makers are completely represented, but the number is easily expansible. Note, also, the references to Country One and Country Two. These are simply the names of the countries mentioned in the message.

Flow Chart of the Salience Bias Routine

Figure 1 is a flow chart of the salience-bias routine for DM(J).

The flow chart can be summarized as follows. The salience of a message is modified by DM(J)'s attitude toward the message source:

NEWSAL = SALDM * ASOUR

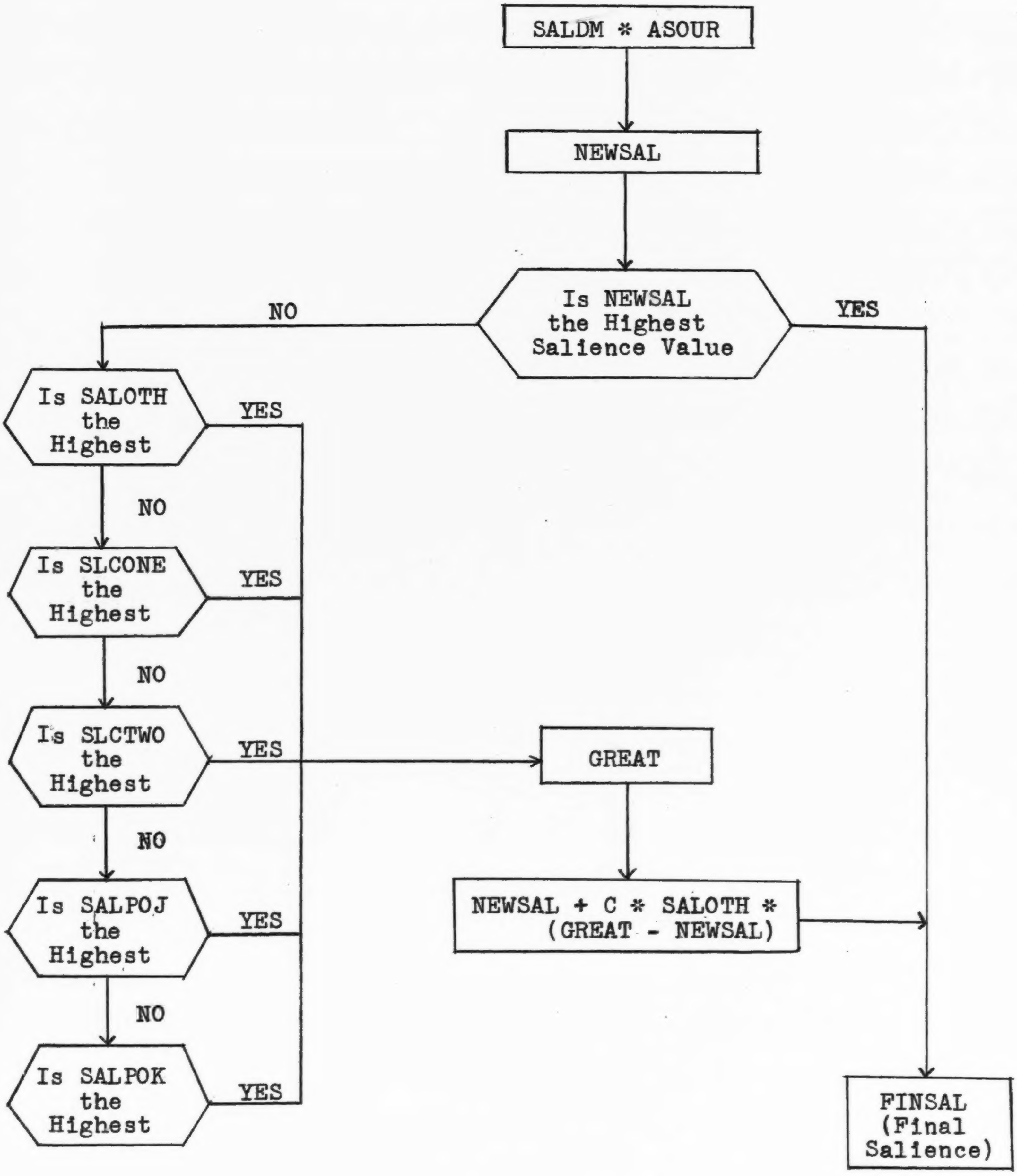
Next, the program finds which of the salience values is highest. If the NEWSAL is highest, it becomes the final salience value. If SALOTH or one of the other values is highest, it is renamed (GREAT) and the final salience is found by the equation,

FINSAL = NEWSAL + C * SALOTH * (GREAT - NEWSAL) where C is a parameter that can be used by the researcher to weight the importance of the other decision maker. The equation embodies the second and third propositions of the model: People pay more attention to news from a trusted, liked source and to facts that they will have to act on or discuss because of attention by others. The first proposition is embodied in other parts of the program.

Salience Decay

After the final salience values have been calculated for

Figure 1. Flow Chart of the Salience Bias Routine for DM(J).


SALDM * ASOUR
NEWSAL
Is NEWSAL the Highest Salience Value
NO
YES
Is SALOTH the Highest
YES
NO
Is SLCONE the Highest
YES
NO
Is SLCTWO the Highest
YES
GREAT
NO
Is SALPOJ the Highest
YES
NEWSAL + C * SALOTH * (GREAT - NEWSAL)
NO
Is SALPOK the Highest
YES
FINSAL (Final Salience)

each message, they are subjected to salience decay. Each value is modified by an exponential decay algorithm,

$$\mathrm{FINSAL} * (D)^{t}$$

where D = rate of salience of decay and t = the number of weeks since the message has been received. Messages with values below a threshold supplied by the researcher are dropped from the DM's attention.

ANALOGUES TO CLASSROOM LEARNING

Earlier we discussed the application of the Crisiscom model to the study of selective attention and forgetting in the classroom. Now, we will make the analogy more specific, describing the salience measures and methods of data collection that were used in the study.

In Crisiscom decision makers use events to organize the messages they receive. An event is a topic or category and must be specified by the researcher. For the students in 14.003, we can let the topic of each lecture be an event. With the exception of the introductory lecture, these topics are fairly well-defined and are the focus of the lecture. The topics of the first six lectures are listed below:

Lecture	Topic
A	Introduction to the Course
B	The Psychology of Persuasion
C	A Case Study: Voting
D	Political Leadership: Freudian Theories
E	Political Leadership: Politics as a Vocation
F	Pre-Industrial Life

Messages in Crisiscom contain the information the decision makers must process. In the classroom such information might include the concepts, theories, and illustrations used by the lecturer. In this study some of the social science concepts from each lecture were selected to be the messages. Some of the concepts, like "culture," were chosen because they were very important, while others, like "bilabial stops," were only tangentially related to the topic of the lecture. A total of 36 concepts were selected from the six lectures. In other words, there are six events and 36 messages.

In Crisiscom the SALDM is the initial salience of each message for the decision maker. The SALDM of each concept for the students was inferred from an inspection of their notebooks.[3] We assumed that students would take notes on the concepts they thought were very important, while they would ignore the less salient concepts. Hence, the frequency that a concept was noted by the students was used as a measure of SALDM.

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[3] See the Appendix for a description of all salience measures.

ASOUR is the decision maker's attitude toward the message source, and it is used to modify the salience of the message: People pay more attention to news from a trusted, liked source. In the classroom the message source is the lecturer. Therefore, we asked students to rate the quality of each lecturer. This measure was used as the ASOUR value.

The third proposition of Crisiscom is that people pay more attention to news they will have to act on or discuss because of attention by "significant others." SALOTH is the value that is used by the computer model to take the other decision makers into account. In 14.003, students must take examinations and participate in seminar discussions about the lecture topics. Therefore, the person who grades the exams and directs the discussion, the seminar leader, is a very important referent for the students. This postulate enabled us to measure SALOTH. We asked the seminar leaders about the extent to which they discussed each concept in their weekly meetings.

Finally, we wanted to take into account the students' previous knowledge of each concept. We hypothesized that a concept might be more salient for students, if they had heard of it before. Since we did not have an opportunity to question the students before the course began, we surveyed a control group that was being used for other research on the course. We asked these students, sophomores who had not taken the course, about their knowledge of the concepts.

Let us now summarize the principles of Crisiscom as we have applied them to the study of the students in 14.003:

1. Students will pay more attention to material presented by a lecturer they like.
2. Students will pay more attention to material they will have to act on or discuss because of attention by their seminar leaders.
3. Students will pay more attention to material they have read or learned before.

These are the three selective-perception principles that were used in our simulation of classroom learning.

Crisiscom also makes provision for predicting salience decay as a function of time and for messages to be dropped or "forgotten" from the decision makers' attention. In order to measure the accuracy of these predictions, data were collected on the salience of the 36 concepts after the series of six lectures. Two kinds of measures were obtained. Students were asked to write a one-sentence definition of each concept. These definitions were graded, and the percent getting each concept correct was tabulated. Then, the students were asked to rate the relative importance of each on a scale of -4 to +4. The definitions and the ratings were used as criteria for judging Crisiscom's predictive ability.

FINDINGS AND INTERPRETATION

Running Crisiscom

One of the advantages of computer simulations is that they can be run over many times with minor variations. Since the computer runs fast, the researcher can alter the parameters to observe changes in outcomes. In our simulation of information processing by students, two of the parameters were systematically changed. First, we ran it using different values of C, a parameter that weights the importance of SALOTH, the salience of the message for the other DM, in the salience-bias equation (see page 6). When $C < 1$, the importance of SALOTH is reduced, while it is increased by making $C > 1$. In this way the researcher can adjust the Crisiscom model to reflect the kind of situation he is simulating. In a classroom simulation, for example, one might set this parameter high, if the students are well motivated, and, therefore, pay a lot of attention to the seminar leaders. A lower value of C, on the other hand, might be more appropriate for students who have little interest in the seminar discussions. In this study we used six different values of C, ranging from 0.2 to 2.5.

We also varied D, the parameter used in the salience decay algorithm. The value of D can range between +1 and 0, with the lower values resulting in greater salience decay. We let it vary between 1.0 (no decay) and 0.65 (much decay) and examined the resulting changes in the Crisiscom predictions.

After running Crisiscom, we did a correlation and regression analysis to get an idea of its predictive ability. First, we found the correlation coefficient between the outcomes predicted by the model and the data on the percentage of students correctly defining each concept after the series of six lectures.

Then, the standard error of estimate, a measure of the dispersion of the predicted values around the observed values, was calculated. These findings are reported and discussed below. Next, we inspected the best Crisiscom prediction and the data on definitions to find which of the concepts had been "forgotten" and should be removed from the students' attention. Then, we calculated the correlation coefficient between the remaining concepts and the ratings of the importance of each concept by students at the end of six weeks. Once again, the standard error of estimate was calculated to help describe the accuracy of Crisiscom's predictions.

Crisiscom's Predictions of Remembering

In this section we will report the results of our analysis of the relationship between the salience values generated by Crisiscom and the data on the percent of students remembering each concept after the series of six lectures.

First, the salience decay parameter was set equal to 1.0 and the relationship was examined for the various values of C, the parameter that changes the importance of SALOTH for the students. In other words, we were interested to see whether changes in C made any difference, when there was no salience decay. Table 1 reveals that the correlation was almost the same for all six values of C, ranging from .49 to .52. Differences this small are not statistically significant. The standard error of estimate, a measure of the dispersion of the predicted values around the observed values, remained constant at .32. Further analysis, not shown here, revealed that variation in C also made no significant difference in the correlation at the seven other rates of salience decay. Hence, we can conclude that changes in the importance of SALOTH in the model do not affect its ability to predict our data on remembering by students.

Table 1. Relationship Between the Percent of Students Remembering Each Concept and Crisiscom Predictions for Various Levels of C with No Salience Decay. N = 36.

	Correlation Coefficient	Standard Error of Estimate
C = 0.2	.49	.32
C = 0.8	.51	.32
C = 1.5	.52	.32
C = 2.0	.52	.32
C = 2.5	.52	.32

Next, we examined the size of the correlation coefficient and standard error of estimate at the various rates of salience decay. For this analysis, we arbitrarily chose to set the value of C equal to 2.5. The results are displayed in Table 2. As the model assumed greater salience decay on the part of the students, the correlation coefficient became progressively smaller. For example, it was .52 when the rate of salience decay was .95, but fell to .31 at the .65 rate of decay. Since the amount of variance explained is the square of the correlation coefficient, this is a sizeable reduction.

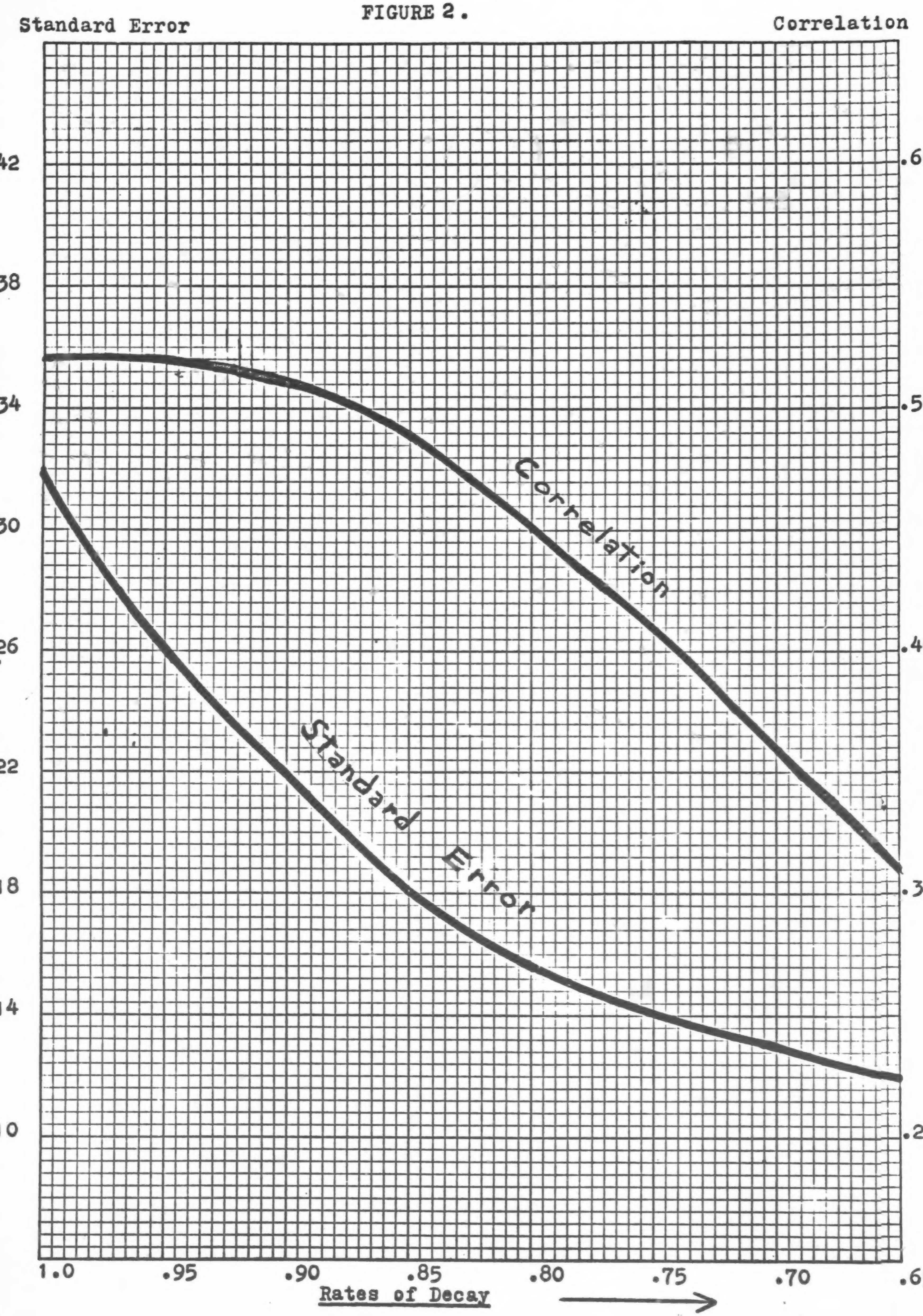
Table 2. Relationship Between the Percent of Students Remembering Each Concept and Crisiscom Predictions for Various Rates of Salience Decay. N = 36.

Rate of Salience Decay	Correlation Coefficient	Standard Error of Estimate
1.0	.52	.32
.95	.52	.26
.90	.51	.22
.85	.49	.18
.80	.45	.16
.75	.41	.14
.70	.36	.13
.65	.31	.12

Now let us look at the standard error of estimate, a different statistical measure of Crisiscom's predictive ability. At the 1.0 rate of decay the standard error is .32, but it falls to .12 at the .65 rate. Greater salience decay, therefore, reduces the dispersion of the Crisiscom predictions around the observed values. In other words, this statistical measure suggests that Crisiscom does a better job of predicting remembering, when the model assumes much salience decay.

Figure 2 is a graph of these values at the eight different rates of salience decay. The top curve is a graph of the correlation coefficient and the bottom curve is a graph of the standar error of estimate. Notice that the correlation decreases slowly between the 1.0 rate of decay and the .85 rate. However, between the .85 rate of decay and the .65 rate the decrease is much more

FIGURE 2.


Standard Error
Correlation
42
38
34
30
26
22
18
14
10
.60
.50
.40
.30
.20
Correlation
Standard Error
1.0
.95
.90
.85
.80
.75
.70
.65
Rates of Decay

rapid. The opposite pattern can be observed for the standard error values. Between 1.0 and .85 there is a rapid improvement in the standard error, but it improves more slowly between .85 and .65. In short, the .85 rate of salience decay has a special significance for these data. Below this rate there is a considerable reduction in the correlation, but only a small improvement in the standard error.

Figure 2 shows that increased decay results in a poorer correlation but an improved (i.e., lower) standard error of estimate. This may seem paradoxical. However, the correlation and the standard error are measuring different aspects of the distribution. The correlation is sensitive to random measurement errors, and these errors, which tend to reduce the size of the correlation, increase over time. Since Crisiscom predictions modify the initial predictions by calculating decay as a function of time, a decreased correlation can be expected. However, the decay algorithm also eliminates extreme values, consequently reducing the standard deviation. Hence, the standard error of estimate, which measures dispersion, improves.

A Threshold for Forgetting

In Crisiscom messages are dropped from the decision maker's attention when they fall below the forgetting threshold. This threshold is set by the researcher, and it must be inferred from by inspection of his data.

We began by inspecting the Crisiscom prediction for each concept at the .85 rate of salience decay. You will recall that below this rate of decay the correlation rapidly decreases, while the standard error shows only slight improvement. The predicted values, arranged in descending order, are displayed in Table 3. To the right of the concept name is the Crisiscom prediction; to the left is the percent of students who correctly defined it. For example, 94% of the students knew "superego," but none of the students could correctly define "interest aggregation" or "anomie."

Suppose that the forgetting threshold is at 33% remembered. That is, let us regard a concept that fewer than 33% of the students could define as being "forgotten." Now let us inspect the Crisiscom values and separate the "forgotten" concepts from the "remembered" concepts. As you can see in Table 3, the Crisiscom values for 15 of the "remembered" concepts range from .59, culture, to .22, perceptual distortion. Moreover, the values of 16 "forgotten" concepts range from .21, legitimacy, to .00. Now look at the third group of concepts in Table 3, the "errors." 25% of the students defined reaction formation correctly, so it is "forgotten." Yet, the Crisiscom prediction is very high, .56. The other four concepts were remembered by the students, the percentages ranging between 75% and 53%, but have low Crisiscom values. Thus, Crisiscom made five errors.

Further inspection of the values reveals that 33% is the best threshold for forgetting at this rate of decay; it minimizes the number of errors.[4] Therefore, we will regard 33% as

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[4] Values for the other seven rates were also examined. For no other rate of decay did Crisiscom make fewer than 5 errors.

Table 3. Percent of Students Defining Each Concept, with 33% as the Forgetting Threshold, and the Crisiscom Predictions at the .85 Rate of Decay.

Percent Defining Each	Concept Name	Crisiscom Prediction
	REMEMBERED	
68%	Culture	.59
52	Sublimation	.56
44	Libido	.53
94	Superego	.53
59	Perception	.44
41	Value Satisfaction	.43
47	Attitudinal System	.40
41	Latent Predispositions	.40
75	Cross Pressures	.40
44	Socialization	.39
50	Consistency Principle	.31
62	Balanced State	.29
84	Selective Perception	.29
62	Fixation	.29
81	Perceptual Distortion	.22
	FORGOTTEN	
25%	Legitimacy	.21
0	Consensual Behavior	.20
10	Trace Line	.11
5	Interest Articulation	.10
25	Social Approval	.09
21	Lineal	.06
31	Isolation of Cognitions	.03
33	Absolute Ethic	.03
23	Personal Efficacy	.02
11	Location Theory	.02
19	Reference Group	.02
6	Social Distance	.02
33	Political Broker	.02
31	Issue Salience	.02
0	Anomie	.00
0	Interest Aggregation	.00
	ERRORS	
25%	Reaction Formation	.56
56	Symbolic Denial	.18
53	Bilabial Stops	.06
69	Componential Analysis	.06
75	Scalability	.04

the forgetting threshold and drop the 17 "forgotten" concepts from the student's attention.

Crisiscom's Predictions of the Importance of the Remembered Concepts

Now we are going to focus on the "remembered" concepts, the 19 concepts that at least one third of the students could correctly define after the series of lectures. We will examine the relationship between the Crisiscom values for these concepts and the ratings of the importance of each concept by the students at the end of six weeks. In other words, we are interested in how well Crisiscom can predict the salience of the concepts that are still in the students' attention.

Like the previous analysis, we first set the decay rate equal to 1.0 and examined the correlation and standard error at various levels of C. The findings are shown in Table 4. Note that all of the correlations are higher than those previously reported. When C = 2.5, for example, the correlation is .60, compared to .52 for the relationship between the Crisiscom values and the data on student remembering. Moreover, the standard error is lower for this relationship, .25 at C = 2.5, compared to .32 for the other data.

Note also that C does have some effect on the correlation. When C = 0.2 the correlation is .53, while it is .60 at C = 2.5. Further analysis, not reported in this table, shows that this difference becomes even greater, at lower salience decay rates. At the .85 rate of decay, for example, the difference between correlations is almost .20. Clearly, the higher values of C enable the model to make better prediction. This can be interpreted as showing

3

that the students, in their judgements of the importance of the concepts, take the seminar leaders into account very much. The seminar leaders are important referents for the students.

Table 4. Relationship between the Importance of Each Remembered Concept for the Students and Crisiscom Predictions for Various Levels of C with No Salience Decay. N = 19.

	Correlation Coefficient	Standard Error of Estimate
C = 0.2	.53	.26
C = 0.8	.57	.26
C = 1.5	.58	.26
C = 2.0	.59	.25
C = 2.5	.60	.25

Once again we compared the size of the correlation coefficients and the standard error of estimate at the eight rates of salience decay. These relationships are shown in Table 5. The pattern that emerges is very similar to the previous one. Increases in salience decay result in lower correlations, .60 at the 1.0 rate of decay versus .31 at the .65 rate. On the other hand, the standard error of estimate improves with greater decay. These statistical measures are graphed in Figure 3. Note once again the rates of decrease in the correlation above and below the .85 level of decay. Between 1.0 and .85 the correlation decreases much more slowly than between .85 and .65. On the other hand, the improvement in the standard error is relatively slight below the .85 rate of decay. It will be interesting to see whether this same pattern is observed in Crisiscom simulations of other information processing situations.

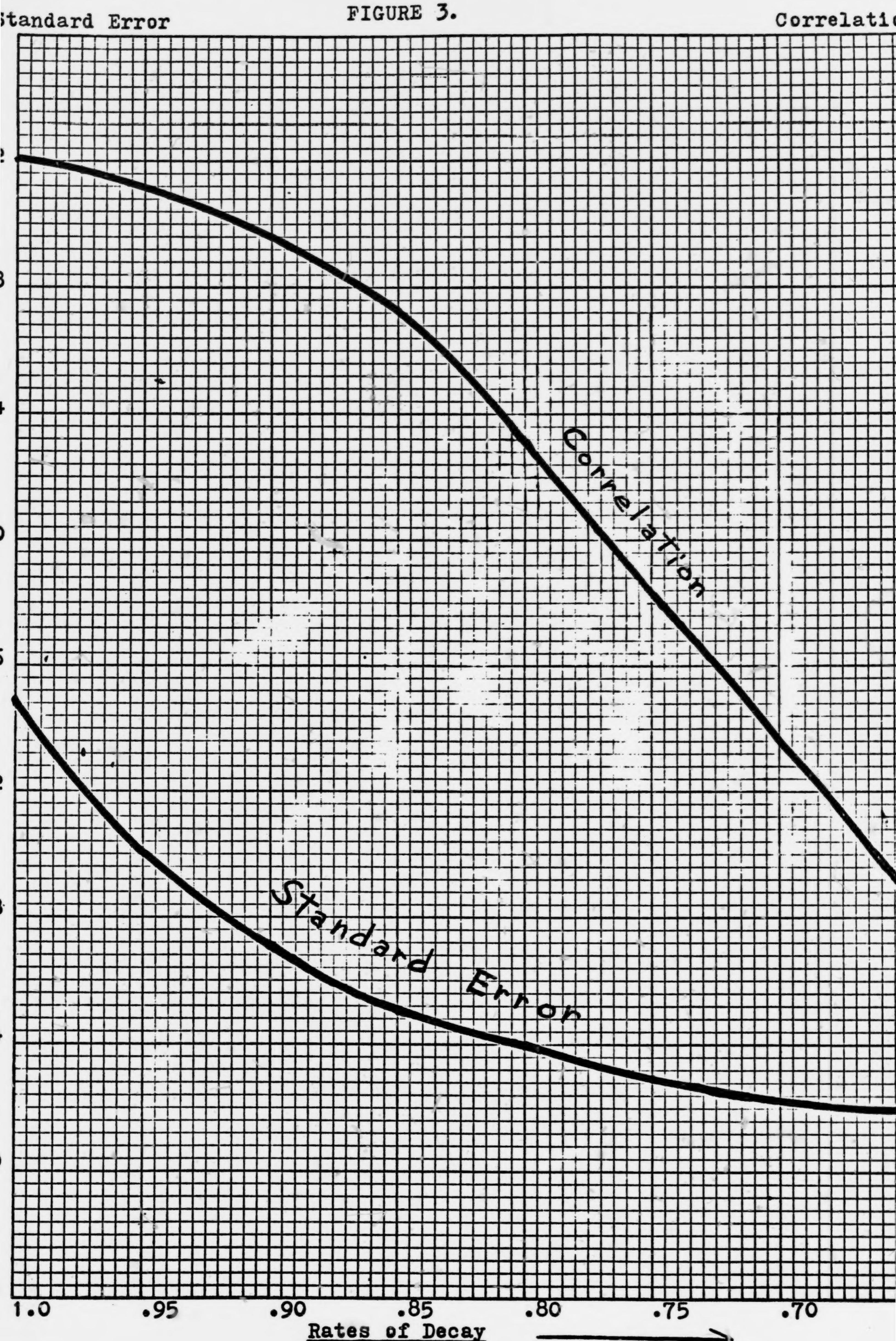
Table 5. Relationship between the Importance of Each Remembered Concept and the Crisiscom Predictions for Various Rates of Salience Decay. N = 19.

Rate of Salience Decay	Correlation Coefficient	Standard Error of Estimate
1.0	.60	.25
.95	.59	.20
.90	.57	.17
.85	.54	.15
.80	.49	.14
.75	.43	.13
.70	.37	.12
.65	.31	.12

It might be useful at this point to examine one of the concepts, "componential analysis," more closely. We chose this concept because the discrepancy between its rating by the students and the Crisiscom prediction was very large. The students rated it as the third most important concept of the course, yet its Crisiscom value at the .85 rate of decay is as low as "bilabial stops," .06.

Why was the Crisiscom so low? Let us examine the input values for this concept. The concept was discussed in lecture F, the last lecture in the series. The lecturer spent the last 15 minutes of the period describing componential analysis, a

FIGURE 3.


Standard Error
Correlatio
Correlation
Standard Error
1.0
.95
.90
.85
.80
.75
.70
Rates of Decay

set-theoric technique for analyzing anthropological data. Judging from its rating, the technique made a big impression on the students. Since it is mathematical, it is easy to understand why the M.I.T. sophomores were impressed. Yet, only 3 of the students in our sample bothered to write it in their notebooks. In fact, very few of the students took notes during the entire lecture. This may be due to the fact that the students perceived the lecturer as being poor; his rating, in z-score units, was -1.73. Consequently, the SALDM was low and it was further reduced by the ASOUR. The other salience values were also no help. Only one seminar leader discussed the concept, and none of the students in the control group had heard of it. Since the concept came from the last lecture, the salience-decay reduction was relatively small. However, the value was not large enough to benefit.

Thus, the most deviant case can be explained by a number of factors. Other factors undoubtedly can account for other discrepancies. These deviant cases, coupled with measurement error, serve to reduce the correlations. Nevertheless, the principles of Crisiscom seem to work, and its usefulness for studying information processing in the classroom has been demonstrated.

APPENDIX

SALDM[5]

Measuring the initial salience of each concept for the students posed a problem. Since the concepts had not been selected beforehand, it was impossible to use questionnaires during or immediately after the lecture. An alternative method was used. At the end of the series of six lectures, we asked a random sample of 30 students to let us examine their notebooks. Since only 15 students complied, we may have gotten a biased sample. We suspect that students were afraid that their notebooks were going to be graded. If this was true, we probably got few notebooks from students who do not take many notes.

In each notebook we counted the number of times the concept name or definition appeared. We found, for example, that almost everyone had written "perception" and "value satisfaction" in his notebook, but no one wrote or defined such concepts as "issue salience" or "legitimacy."

Reading the notebooks, we got the feeling that students took substantially more notes during the popular lectures. So, we counted the number of lines of notes the students had taken during each lecture. These data, along with the student ratings for each lecture, are shown in Table 6. As you can see, there is a very high relationship between the popularity of the lectures and the average number of notes taken. Students took an average of 51.67 lines of notes during lecture B, the most popular, while they took only 37.77 lines during lecture D, the second most popular.

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[5] All of the raw scores for these data were first transformed into z-scores. Then, they were normalized between 0 and +1 (or -1 and +1 in the case of ASOUR) for use in the Crisiscom model.

Table 6. Ratings for Each Lecturer and the Average Number of Lines of Notes Taken During Each Lecture. (Lecture A is Omitted.)

Lecturer	Rating N = 74	Average Number of Lines
B	2.3	51.67
D	2.1	37.77
C	1.5	33.50
E	0.3	21.86
F	-1.6	18.90

ASOUR

The ASOUR, the students' attitude toward the lecturers was measured by a rating form (see page 29) given to students at the end of one of the lectures. Students were asked to rate each lecturer on a scale of -4 to +4.

SALOTH

SALOTH is the salience of the concepts for the seminar leaders. We could have asked each seminar leader to rate the importance of each concept, but we were more interested in the students' perception of the salience of the concepts for the seminar leaders. Unless the seminar leader calls attention to certain concepts as being important, the students must infer this information from the discussion. If, for example, the seminar leader discussed some of the concepts in class, the students might conclude that they are regarded as being important by him. Hence, we asked the seminar leaders whether they had "mentioned" or "discussed" any of the 36 concepts (see page 30). These data were used as the SALOTH.

The Control Group

In order to get an idea of the previous knowledge of the students, we asked a group of 50 students who had not taken 14.003, and who were being interviewed for another research project, about their knowledge of the concepts. Unfortunately, it would have been too time-consuming to have had the students write definitions of the concepts. So, we asked them whether they "knew and could define" each of the concepts (see page 31).

Student Definitions

In order to get a criterion for determining the predictive power of Crisiscom, and to get data on forgetting, we randomly divided the 14.003 students into six groups and asked each group to write a one-sentence definition of six of the concepts (see page 32). These definitions were graded by the researcher and the percent of students getting each concept correct was tabulated. (The results are shown in Table 3.)

Student Ratings

On the same questionnaire (see page 32) we asked the students to rate the importance of each concept on a nine-point scale. Average ratings were tabulated for the 19 "remembered" concepts. Only if the student had correctly defined the concept, did we include his rating of it.

PLEASE FILL OUT AND RETURN AT THE END OF THE PERIOD

This questionnaire is designed to let you express an opinion about the lecturers for the first half of the course. Please rate each lecturer on the scales that have been provided. DO NOT SIGN YOUR NAME--THIS IS A CONFIDENTIAL BALLOT.

Professor Frey (Psychology of Persuasion)

Poor -4 0 +4 Good

Professor Fein (A Case Study: Voting)

-4 0 +4

Professor Pool (Freudian Theories)

-4 0 +4

Professor Pye (Politics as a Vocation)

-4 0 +4

Professor Kay (Pre-Industrial Life)

-4 0 +4

Name______________________________

FILL OUT THIS PART FIRST

Below is a list of concepts that have been mentioned in the lectures. We would like to know which ones you discussed in your seminar sections. If you didn't mention the concept, put a check in the left column; if you mentioned it in passing, put a check in the middle column; if you discussed it, put a check in the right column. Remember, there need not be any relationship between the importance of a concept and your treatment of it in the seminar. Please return to 14N-213.

Didn't Mention	Mentioned in Passing	Discussed	
			Personal Efficacy
			Reaction Formation
			Consensual Behavior
			Symbolic Denial
			Consistency Principle
			Fixation
			Isolation of Cognitions
			Location Theory
			Lineal
			Selective Perception
			Interest Articulation
			Attitudinal System
			Culture
			Bilabial Stops
			Value Satisfaction
			Perception
			Latent Predisposition
			Social Distance

Didn't Mention	Mentioned in Passing	Discussed	
			Social Approval
			Interest Aggregation
			Componential Analysis
			Scalability
			Balanced State
			Issue Saliency
			Absolute Ethic
			Anomie
			Trace Line
			Reference Group
			Political Broker
			Sublimation
			Superego
			Cross Pressures
			Socialization
			Legitimacy
			Perceptual Distortion
			Libido

Name______________________________

Below is a list of concepts that are discussed in 14.003, Society and Man. We would like to know which concepts you are familiar with. Put a check in the first column if you have never heard of the concept; in the second column if you have heard of the concept, but can't define it; and in the third column if you think you can define it. Don't worry if you are not familiar with most of them--they are hard concepts.

	Never heard of it.	Heard of it, but can't define.	Know and can define.
Absolute Ethic	☐	☐	☐
Anomie	☐	☐	☐
Trace Line	☐	☐	☐
Reference Group	☐	☐	☐
Political Broker	☐	☐	☐
Sublimation	☐	☐	☐
Superego	☐	☐	☐
Cross Pressures	☐	☐	☐
Socialization	☐	☐	☐
Legitimacy	☐	☐	☐
Perceptual Distortion	☐	☐	☐
Libido	☐	☐	☐

Name____________________________ Time Limit: 10 Minutes I.

Write a one-sentence definition of the following six concepts. This exercise will not be graded, but will be used to help us evaluate the effectiveness of the lectures.

Reaction Formation:

Consensual Behavior:

Symbolic Denial:

Consistency Principle:

Fixation:

Isolation of Cognition:

Now we would like to know how important you think these concepts are to the study of society and man. Please rate each concept on the nine-point scales that have been provided. If you are not sure about the importance of a concept, give it a rating of 0. THERE ARE NO RIGHT ANSWERS--WE WANT TO KNOW HOW YOU EVALUATE THEM.

	Unimportant		Important
Reaction Formation:	-4	0	+4
Consensual Behavior:	-4	0	+4
Symbolic Denial:	-4	0	+4
Consistency Principle:	-4	0	+4
Fixation:	-4	0	+4
Isolation of Cognition:	-4	0	+4

APPENDIX C

STATISTICAL SUMMARY
OF
STUDENT OBSERVERS' REPORTS

17.01 Seminars

Spring 1966

Statistical Summary of Student Observers' Reports

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Introduction

The data in this pamphlet are a summary of the data collected from the 17.01 seminars during the Spring semester. Only five of the first eight weeks and six of the last seven weeks were included; the weeks not included were the first week, the week of the mid-term examination, the week devoted to discussion of term paper topics, and the last week of classes.

The main objective in producing the pamphlet was to summarize and group data in meaningful ways so as to provide a basis for further analysis; no statistical or qualitative analysis was made of the data, but it was organized to indicate and facilitate the subsequent analysis to be performed.

The data is presented in four groups, which are as follows:

1. Weekly Topic Profiles

These charts provide a basis for the weekly comparison of the content of each of the nine seminars and the relative emphasis given to the topics covered in each. For each seminar, the general topics covered and the time devoted to each topic are indicated. All references made by the instructor to specific authors, books, or current events relevant to the discussion are included.

2. Weekly summaries of seminar characteristics

The nature and amount of the overall student involvement in the class are shown in this group of charts. The three ways in which a student can participate in class discussion are as follows:

a) Voluntary student participations and student-teacher exchanges.
   The student responds to a question directed to the class in general or participates on his own initiative.

b) Non-voluntary student participations and student-teacher exchanges.
   A student is called on by name to answer a question or to participate.

c) Spontaneous interchanges among students.
   Two or more students interact with little or no direction from the teacher.

Within each of the above categories, interactions were measured in two ways. A student participation is defined as each separate comment, question, or other meaningful noise made by the student. A student involvement is defined as each continuous group of questions, comments and meaningful noises made between the teacher and a particular student or among a group of students. The gross figure represented by the total student participations is only used in the chart entitled "Total Number of Student Participations;" all other charts are based on student involvements.

In the charts showing raw figures (figures in parentheses) and corrected figures, the raw data were corrected to compensate for different seminar sizes and varying student attendance, thus providing a more meaningful basis for comparisons among seminars and between different weeks. Correction formulas used are shown at the bottom of each chart.

3. Participation by Summated Frequency Groups

These charts provide a more detailed representation of the weekly student involvement pattern for each seminar. Each student was classified as a frequent, moderate, or infrequent participator each week depending on the number of times he became involved in the class discussion that week. (Frequent participator= 5 or more involvements; Moderate participator= 3 or 4 involvements; Infreq. participator= 2 or fewer participations) Each student's total performance for the first half of the semester (first five weeks) was determined by totaling the points assigned to him based on his weekly performances. On the basis of the total points assigned to each student for the first five-week period, the class was somewhat arbitrarily broken down into groups of frequent, moderate, and infrequent participators. The groups thus established for the first half of the semester were held constant for the second half regardless of the performance of each individual student.

These groups of frequent, moderate, and infrequent participators were defined separately for each seminar and show the performance of each student relative to the other members of his seminar.

The total amount of class discussion dominated by each group (column titled "% Disc.") was determined by summating the total number of involvements of the students in each group for the entire period.

4. Graphs

The graphs entitled "Participation by Summated Frequency Groups" show the percentage of discussion dominated by each of the groups defined above on a weekly basis.

In the graphs entitled "Percentile of Class Participation by Freq.-Mod.-Infreq. Participants," the groups of participants were defined in absolute terms for each week. Each week, the students defined as frequent, moderate, and infrequent participators for that week were grouped and the percentage of class discussion they dominated was determined.

TOPIC PROFILE WEEK OF: 2-15 READING: Banfield

0 Min. 30 60 90 120 Min.

BLOOMFIELD	Housekeeping	Discussion of Parker; methodology and thesis; relation to natural science research	Break	Discussion of Banfield; methodology; his approach to problem; contrasted with Parker; ethical problems in primitive societies	
WINTER	No Data				
FEIN	Comparison of the Kwakiutl and American societies: in terms of what parents expect of children; also Zuni society	Disc. of similar characteristics existing in three societies	Disc. of acceptable and functional behavior in society; distinctions; natural inclination; ref. to lecture on pre-industrial society	Banfield--amoral communalism; analogy to U.S. situation	Disc. of lecture; difference between ascription and achievement
SEASHO	No Data				

2/15

0 Min. 30 60 90 120 Min

RIGGS CARNEY	Housekeeping	Disc. of Parker and Benedict; social change; copies of excerpts from The Italians by Barzini distributed	Disc. of Banfield; methodology; thesis; relation to Barzini and Lewis; TAT's; comparison to Parker; misère and amoral familism; Berelson and Lerner	Disc. of The Italians; Barzini's methodology; comparison to Montegrano	Disc. of Lewis' Children of Sanchez vs. Banfield; references to Benedict, Parker, Durkheim; aspects of change	
DEXTER (e)	Disc. of Banfield; definitions; TAT; criteria for underdevelopment; behavioral patterns	Housekeeping	Disc. of Benedict, Banfield, and Parker; comparisons; significance of studies; methodology of social scientists; Durkheim	Break	Disc. of the effect of background on reaction to social science	Disc. of researching in social science; problems; generalities; methods of testing hypotheses
DEXTER (h)	Disc. of underdevelopment; why study it; value of lecture given on it; objectives of development programs	Disc. of first lecture; Durkheim's study and its value; Holbauch's study; hypotheses from these studies discussed	Break	Continuation of disc. on suicide; motivation	Disc. of Banfield; his methodology; TAT's; value of his work	
JOHNSON	No Data					
ZONIS	Disc. of GNP; GNI; how definitions are reached; purposes of course; socio-economic studies	Disc. of incentives and motivation in U.S. and USSR; descriptive vs. normative theory; underdeveloped countries	Break	Disc. of Benedict's methodology; postulates; compare Zuni, Kwakiutl, American societies	Specific disc. from Parker thesis; definitions	Disc. of Banfield; amoral familism; methodology; how social change is effected

TOPIC PROFILE WEEK OF: 2-22 READING: Weber

0 Min. 30 60 90 120 Min.

BLOOMFIELD	House-keeping	General disc. of Lerner; aspects of change in Balgat; industrialization and urbanization; attitudes in connection with change; new generation	Break	General disc. of Weber's thesis; its value as analysis; methodology; study of gradual social change; relation to Marxism; predestination		
WINTER	House-keeping	Disc. of spirit of capitalism and contrast with socialism; specific disc. of "calling" in Weber	Gen. disc. of Balgat, specifically the chief--was he a capitalist	Smith's Wealth of Nations discussed; general comparisons of Balgat, Montegrano, Kwakiutl, and Zuni	Calvinism and the effect of the Protestant ethic on capitalism	Disc. of motivation in business today; specific disc. of predestination and Montegrano
FEIN	Disc. of characteristics of trad'l societies, and the process of change; specific mention of Banfield's "amorality"	Disc. of closed systems, specifically minority groups, & difficulty of breaking into such a system	Disc. of Balgat and Montegrano; Lerner--very little introspection	Disc. of research in Israel on trad'l societies & change	Modern societies have elements of traditionalism; tradition discussed in relation to foreign policy program	Disc. of change as a painful process; summary of Weber--emphasis on non-uniqueness of Calvinism as cause for capitalism; disc. of Marxian view
SEAS	No Data					

0 Min. 30 60 90 120 Min.

RIGGS CARNEY	Disc. of the nature of change, specifically Weber and capitalism	Disc. of Weber, specifically influence of tradition; references to Franklin, Kwakiutl and Montegrano	Disc. of Protestant ethic and the concept of a calling in capitalism; disc. of methods of analyzing problem in contemporary societies	Disc. of the importance of predestination and worldly asceticism	Break	Disc. of possible cause and effect relationship, circular, rather than linear; ref. to White, Technology and Social Change	Disc. of the validity of Weber's thesis; disc. of Lerner and traditional society; differences between Weber and Lerner
DEXTER (e)	Disc. of Weber; industriousness of religious groups; relation to MIT student; anti-poverty program; Durkheim	Disc. of Lerner; lack of information; aspects of change; predestination; analogy to present-day lives	Break	House-keeping	Disc. on change; effect of background; effect of change on background; interactions with modernization (background)	Weber; exceptions to his theory; account for human nature; Banfield; concept of culture	
DEXTER (h)	House-keeping	Disc. of Montegrano; relationship between Weber and Banfield; extensive discussion with examples from Banfield	Disc. of amoral familism; relation to present day American society	House-keeping	Break	Disc. centered around organizing a lecture based on material from Weber; disc. of clergy in relation to capitalism	Comparison of Weber and Lerner and applications in our own country; disc. of war on poverty and its usefulness
JOHNSON	No Data						
ZONIS	Disc. of traditional society; Benedict; Banfield; Lerner; family organization in Montegrano; compare Benedict with Smith's; satisficing vs. maximizing	Disc. of individual interests as guarantee of social interests; social security; auto safety; Montegrano	Disc. of Weber; pre-economic activity; spirit of capitalism; how change is induced and from where	Specific discussion of predestination and "rational" man			

TOPIC PROFILE WEEK OF: 3-1 READING: McClelland

0 Min. 30 60 90 120 Min.

BLOOMFIELD	House-keeping	Disc. of lecture material and role of change in developing American foreign policy; modernization as an irreversible process	Political considerations of change; specific disc. of McClelland and Weber as an introduction f. second half of class	Break	Disc. of McClelland --his method and applicability of his conclusions; specific disc. of correlation coefficients	Disc. of Weber--what is i worth; disc. of McClelland, better than Weber because he was more analytic
WINTER	Expl. of correlation coefficients and variance	Disc. of n ach; presence at MIT, in business; question of necessity to include delay of gratification and risk	McClelland discussed in relation to spirit of capitalism; characteristics of high n ach in TAT; which people tend to have high n ach	Specific example of a doctor discussed and factors that come into play in measurement of his achievement; "the operation was successful but the patient lived"	Disc. of others with a high n ach--teacher, pres. of MIT, McNemara; Ques. of how n ach measured in gov't people	Disc. of childhood readers in McClelland; are they valid aids in analysis of n ach, and whose n ach do they measure
FEIN	Disc. of factors that generate change, and ques. of change being induced	Disc. of what caused U.S. to be a highly developed nation; specific mention of causes of change from Weber, Lerner, Banfield, and Smith	Disc. of difficulties of inducing change and ques. of desirability of change; references to Banfield and Benedict and analysis of patterns of social organizations	Disc. of the need for achievement in U.S. society; particular ref. to upward mobility	Disc. of "marginal" in ref. to society, specific mention of grocer in Balgat, Montegrano	Disc. of class impressions of 17.01
SEASHOLES	Summary of last seminar; disc. of cultural relativism; Balgat, Montegrano, Kwakiutl; specific disc. of question of whether or not Montegranesi are happy, then what is happiness	Seminar divided into 3 groups to discuss among themselves what can be done to help various groups economically	Break	General disc. of the conclusions reached by the students in each of three groups; specifically, Montegrano, poor whites, and poor Negroes; role of psychology in change	Summary of account in Balgat; general picture of modernization in Turkey	

3,

0 Min. 30 60 90 120 Min.

RIGGS CARNEY	Disc. of high n ach as seen by McClelland; methods used; TAT	Discussion of Atkinson's model; efficiency of mathematics in approximating real-world situations	Break	Continued discussion of McClelland; entrepreneurs in many countries; n ach in gov't workers; how he doesn't like the way historian operates; connection with amoral familism; study of methodology in social science	
DEXTER (e) (Carney substitute)	Housekeeping	General disc. of characteristics of achievers; comparison of high n ach and low n ach; comparison of Weber, Banfield and McClelland; definition of rational man	Break	Disc. of TAT's in relation to n ach; interpretation of some tests given to high and low achievers	Disc. of Atkinson's model; comparison of American and Soviet system in relation to worker productivity; applications of theory to reality
DEXTER (h) (Seasholes substitute)	Disc. of social and economic change in Balgat--McClelland's viewpoint; contrasts between Balgat and Montegrano	Class broken into 4 groups to prepare lectures on p. 215 and p. 236, McClelland	Groups lectured to each other on material from McClelland--graphs from McClelland, pp. 215 and 236	Disc. of results of analysis by students of McClelland; correlation coefficients explained	
JOHNSON	Disc. of tradition; relation between Banfield and Lerner; education; amoral familism	Disc. of Zuni society; comparison of family in Montegrano to a tribe	Linguistics in social sciences	General disc. of Lerner; leadership roles helping transition; differences between grocer and chief and their roles in process of change; role of empathy	
ZONIS	Disc. of Banfield, Lerner, amoral familism, empathy	Short quiz	Disc. of Weber--his argument and his methodology; characteristics of a traditional society; disc. of origination of capitalism	Disc. of the reasons for the acceptance of Protestantism; reference to asceticism and predestination as factors in Weber	Disc. of McClelland's research techniques and conclusions; reference to U.S. today, Weber; n ach and relation to economic development; discussion of TAT; statistical methods

0 Min. 30 60 90 120 Min.

BLOOMFIELD	Housekeeping	Communications--"Crisis-Com" project at MIT	Disc. of diffusion of innovation; characteristics among social, cultural groups; reasons for opposing change; Rogers	Break	Disc. of differences between political leaders and opinion leaders; Riesman and "other-directed"; relationship between innovator and opinion leader; marginal man; opinion leader in politics
WINTER	Housekeeping	General disc. on change and innovation; five stages of analysis; obstacles to change; painful vs. painless; distinction of change from innovation; grocer in Balgat as change agent	Disc. of innovators; vicarious trial and error; importance of social links; modern and traditional societies	Disc. of opinion leaders; grocer; differences in modern and traditional societies	
FEIN	Disc. on social sciences; non-trivial nature	General disc. on innovations; difficulty of introduction; diffusion process; ideology vs. efficiency; opinion leaders and innovators; examples from Rogers	Questionnaire	General disc. of questionnaire; deals with people's values--religion being key independent variable; diffusion of ideological innovation, difficulties with this	
SEASHOLES	Disc. of Weber; methodology and thesis; capitalism and Protestantism's relationship; what is the value of Weber's thesis	Class divided into three groups--discuss material in McClelland to develop a lecture based on graph of n ach; groups alternate taking breaks; characteristics of high and low n ach discussed	Disc. of efficiency at different tasks by n ach--Balgat and Montegrano	Disc. of Rogers; opinion leaders; innovations; behavioral choice; cognitive dissonance; correlation coefficients	

0 Min. 30 60 90 120 Min.

RIGGS CARNEY	**Housekeeping**	**Disc. of "The Diff. of Innov. among Physicians;" doctors chosen because they were methodologically easy to analyze; differences in ways modern and traditional societies innovate**	**Characteristics of opinion leaders and other personality types**	**Disc. of problems of analysis; sociometric graphs; experiment in "opinion leaders;" Analysists of frequent class participants of first hour**	**Break**	**Continued discussion of class participation; differences between opinion leaders and innovators; mention of The Academic Marketplace**	**Comparison of socially integrated groups to non-integrated groups re influence and the interaction process**
DEXTER (e)	House-keeping	Disc. of opinion leaders and innovation; Rogers; characteristics of opinion leaders; doctors as innovators and opinion leaders	Disc. of sociometry and sociograms as an approach to help stop spread of diseases, etc.	Break	Disc. of term papers; approach to writing	Disc. of race relations and communications	
DEXTER (h)	Housekeeping	Disc. of Rogers with emphasis on social factors in innovation; Peace Corps; air pollution; relation to communications studies	Break	Disc. on lecture material for the week; questions answered concerning term papers	Disc. of sociometry and sociograms; how would communications be helpful in stopping venereal disease, and changing race relations		
JOHNSON	House-keeping	Gen. discussion of Weber; distinctive features of modern capitalism; motivation of money-lenders; Calvinism--any similarities to amoral familism; idea of predestination; calling	Gen. discussion of McClelland; need for achievement; relation to Weber's thesis; who are the high n achievers; what about American businessmen; protestant parents put pressure on children for high n ach				
ZONIS	Housekeeping	Gen. discussion of innovators; Rogers; empathy and relation to innovation; "fads"; personality attributes	Gen. discussion of opinion leaders; Rogers, Menzel and Katz; two-step flow; five stages of analysis; references to Orson Welles, Lazarsfeld; sociograms				

TOPIC PROFILE WEEK OF: 4-5 READING: Mosteller

0 Min. 30 60 90 120 Mi

BLOOMFIELD	House-keeping	Disc. of diminishing marginal returns, "mini-max" theory; prestige of MIT	Disc. of communications and emphasis of teleological man by **Pool**; methodology in social sciences	Break	Disc. of **Mosteller and Nogee**; comparison to methodology of **Banfield**	**Bonham's** disarmament game, discussed; is rational behavior involved	
WINTER	House-keeping	Disc. of utility--what it is; classical economic man; rationality; importance of time; risk and uncertainty; Montegrano	Disc. of **Bauer, Pool and Dexter**; businessman and utility; high n ach and utility; Kwakiutl and utility; Balgat and utility	Disc. of **Simon**; rational man; indifference curves; satisficing vs. maximizing			
FEIN (Seasholes substitute)	House-keeping	Discussion on diffusion; communications; example of Crebiozen; selective perception	Class divided into four groups--two on **Simon** article; two on **Mosteller**--find relevance of the articles; separate discussions carried on	One conclusion--money not a good gauge; utility curves; define rationality; element of uncertainty; Crebiozen case			
SEASHOLES	Term paper topics	Disc. of importance of communications as factor in innovation; **Bauer, Pool and Dexter**; importance of personal involvements	Discussion of lecture and **Bernoulli's** experiments; St. Petersburg and Arrow paradoxes; n ach	Break	Discussion of **Mosteller and Nogee**, **Simon**, **Bauer, Pool and Dexter**, utility measurement; self-interest problems; indifference curves		

4/5

0 Min. 30 60 90 120 Min.

RIGGS CARNEY	Disc. of Bauer, Pool and Dexter; pay-off matrixes; self-interest in rational choice; "mini-max" theory; personal contacts; importance of communications	Break	Disc. of rational behavior theory; Arrow Paradox; marginal utility; real-life analogies	Disc. of von Neumann, Mosteller, Simon; ordinal vs. cardinal utility; indifference curves; methodology; factors involved in gambling; classical model of rational man vs. practical		
DEXTER (e)	House-keeping	Discussion of indifference maps; von Neumann; mathematical ways of describing human behavior; normative versus descriptive theories	Break	Disc. of old projects in course and possible new ones	Disc. of voting--from Adam Smith handout; self-interest; importance of complete information for rational choice	
DEXTER (h)	House-keeping and possible research projects for course	Disc. of normative and descriptive theories on voting; self-interest; Bauer, Pool and Dexter; human behavior	Break	Disc. led by two students asking questions on self-interest for absent students, a practical application; game theory	Bauer, Pool and Dexter; rational model of man--description of it--in today's world; ref. to book by William Wilder	
JOHNSON	Disc. of value of reason in modern social science; Bentham's pleasure vs. pain; utility; penalties for crimes	Disc. of Simon's model for behavior; rational man vs. irrational; contrast Bentham and Simon; utility of money	Disc. of irrationality in Simon's model; lack of complete information; limitations; reference to Freud, Bauer, Pool and Dexter			
ZONIS	Disc. of mid-term exam; what correct answers should have included	Disc. of Arrow Paradox; social preference; transitivity	Disc. of Simon article; rational behavior; time perspective	Break	Disc. of von Neumann and Morgenstern utility in rank order effect of different rationalities	Disc. of Mosteller and Nogee; high and low n ach and utility; gambling

TOPIC PROFILE WEEK OF: 4-12 READING: Smith

0 Min. 30 60 90 120 Min.

BLOOMFIELD	Discussion of Innisfree (school magazine)	Discussion of Freud; background; methodology; progressive behavior in schools;	Break	process of cure; monetary position and neurosis	No Data	
WINTER	Housekeeping	Discussion of the division of labor reference to Smith and Montegrano; up until what point is it most efficient?	Discussion of "pareto optimum;" n-ach; definition of rationality; self-interest	Discussion of tariff policy with reference to Smith and Montegrano; nationalism; comparative advantage	Discussion of example of India and England determining what to produce; change from agriculture to industry	Discussion of errors in practicality of Smith's theory; game theory; Shubik p. 127; n-ach
FEIN	Housekeeping	Discussion of utility theory and rational behavior; references to Simon, Smith; also de Mandeville's Fable of the Bees; Arn Rand; function of utility theory in political action; role of government	Break	Discussion of voting; relation to game theory and utility theory as a method of going from individual preferences to societal priorities; Arrow Paradox	Discussion of zero-sum game; mini-max strategy; "pareto optimum"	
SEASHOLES	Discussion of Mosteller; utility and indifference curves; rational man;"pareto optimum;" practical applications of theory	Discussion of Millikan lecture; equilibrium in systems; "mini-max" theory; Marschak article; behavior control; zero-sum game; game theory; Simon and complete information; example of trade--is it zero-sum game?	No Data			

4-12

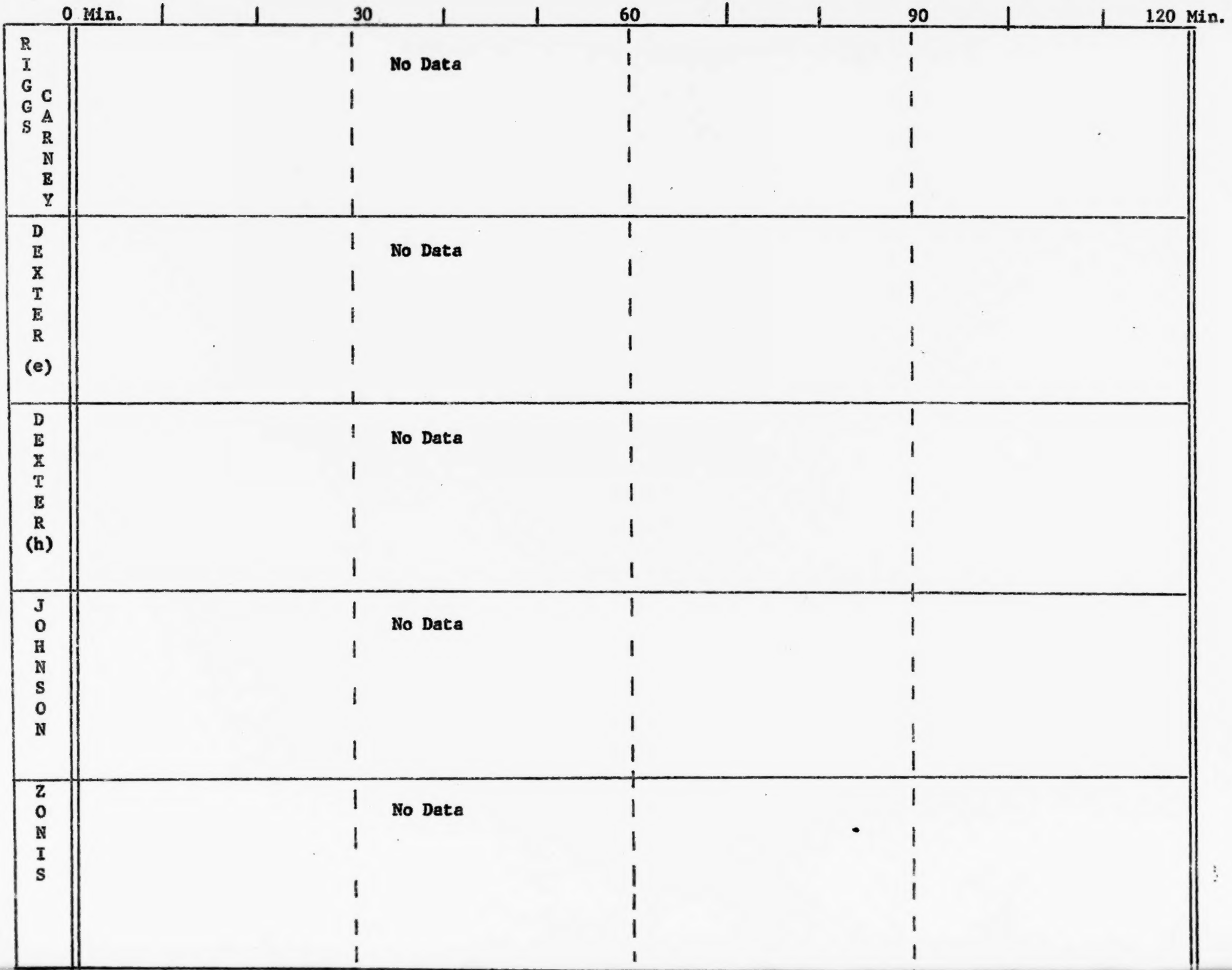
0 Min. 0 | 30 | 60 | 90 | 120 Min.

RIGGS CARNEY (Dexter substitute)	Discussion of utility; "time" vs. "money;" reference to lecture by Millikan	Discussion of "maximizing"--what does one seek to maximize; relation to rational and irrational models of man; define rational and irrational actions	Break	Discussion of mini-max theory--problems involved with using this to determine course of action; discussion of Smith's division of labor; references to Simon	
DEXTER (e)	Discussion of monopolies and productivity; relation to technological change	Discussion of rationality; attempts at definition; what does man try to maximize; effects of various factors such as self-interest	Break	Continuation of discussion of self-interest and decision-making	Discussion of Adam Smith and economic man; division of labor; invisible hand
DEXTER (h)	Discussion of self-interest; effect on decision-making; mention of Simon; rational model and decision-making; Edwards' characteristic of the rational thinker; money	Break	Discussion of how Smith explains the change from pre-industrial to industrial society; division of labor; relation to Weber; invisible hand and socialism; mini-max theory discussed also; ranking preferences		
JOHNSON	House-keeping	Discussion of Adam Smith; money and barter economy; concept of division of labor; specialization and maximization of comparative advantage	Discussion of law of comparative advantage; example of Switzerland and Senegal--watches and peanuts; decrease of cost/unit with increasing quantity	Discussion of problem of changing ordinal to cardinal preferences; intensity of feelings and variations; individual preferences	
ZONIS	Discussion of utility; ref. to Smith, Benthem, Mosteller, Von Neumann; trade and how it is affected by division of labor; zero-sum game; indifference curves	Break	Discussion of Mosteller; methodology; utility of money; application of Von Neumann utility equations; n-ach	Discussion of Game Theory; prisoner's dilemma; American defense problems; "pareto optimum;" rational choice	

TOPIC PROFILE   WEEK OF: 4-19   READING: Lasswell

0 Min. — 30 — 60 — 90 — 120 Min.

BLOOMFIELD (Dexter substitute)	Administration of TAT's and Prof. Fein's survey	Break	Discussion of transition from traditional to industrial society; Weber and Adam Smith; division of labor; economic man; relation to capitalism	
WINTER	Administration of TAT	Discussion of Freud; reference to Dora--a case study of hysteria; trauma, hypnosis; free-association; distinction of neuroses and psychoses; class experimented in methodology of free association for about 25 minutes--extremely interesting		
FEIN	Administration of TAT	Discussion of rational model, stimulus model, and irrational model; mention of Freud; symbolism and dreams; everything explained in terms of sex drive; psychoanalytic method; cures used by this method		
SEASHOLES	Housekeeping	Administration of TAT	Discussion of re-search projects	Discussion of irrational behavior; Lasswell's study of Lincoln; evaluation of Freud's method


0 Min.
30
60
90
120 Min.
RIGGS CARNEY
No Data
DEXTER (e)
No Data
DEXTER (h)
No Data
JOHNSON
No Data
ZONIS
No Data

TOPIC PROFILE WEEK OF: 4-26 READING: Asch

0 Min. — 30 — 60 — 90 — 120 Min.

BLOOMFIELD	House-keeping	Discussion of lecture on Freud and stages of development; group psychology	Discussion of 1960 or 1964 presidential election; choice based on identification with candidate; relation of the individual to process of state	Break	Discussion of Asch experiment, example of roll call vote in U. N.--just how far does social pressure make one go? How does this affect independence of judgement?
WINTER	Housekeeping (Discussion of research projects)	Discussion of leadership in a group; relation to Readings in Social Psychology; effect of special interest	Discussion of "Hawthorne effect;" characteristics of groups; is seminar a group; Winter conducted a "group" oriented discussion aimed at showing students theory in practice		
FEIN	House-keeping	Discussion of value of theories such as Freud's; possibility of it being a self-fulfilling hypothesis causing people to act that way	Discussion of the Asch and Hawthorne experiments; pressures of societies to conform; conformity as a product of the American culture; mention of The Authoritarian Personality and what happens if we meet our "double"	Discussion of irrational model of man and Freud; should his theories be accepted or rejected; papers returned at end of hour	
SEASHOLES	House-keeping	Discussion of Lasswell; political types; use of the word energy; does not describe method, rather prescribes his ideas; relation of individual to environment; is Lasswell's system really convincing?	Break	Continued discussion of Lasswell, attempting to relate it to 17.01 course; relation of individuals to groups; identification with group; Freud and role of group; function of leader	

4-26

0 Min. 30 60 90 120 Min.

RIGGS CARNEY	Housekeeping	Discussion of Freud; contributions of S-R model versus rational model; terms such as projection, sublimation, etc; individual versus social psychology; empirical psychology	Break	Discussion of Asch experiment; methodology; group influence as described by Freud; discussion of Readings from Social Psychology; what is role of leader in group	
DEXTER (e)	Discussion of leadership and characteristics of a group; Freudian concept of identification	Discussion of Selznick reading; concept of primary group; the substitution of secondary relationships for primary in transition to industrialization	Break	Discussion of effect of environment on type of relationships formed	House-keeping
					Discussion of "Hawthorne effect;" utility versus social influence theory of human behavior; motivation and group behavior
DEXTER (h)	Discussion of primary group relationships; M.I.T., Kwakiutl, American society--what are these group relationships; Freud and groups; elements of emotion --hate, love, etc; examples of sublimation and other Freudian terms	Break	House-keeping	Discussion of "Hawthorne experiment;" book by Goffman mentioned; tyranny of schooling discussed; Freud as a social and clinical scientist	
JOHNSON	No Data				
ZONIS	Housekeeping	Discussion of Freud; Atlantic magazine, "Freud on Football;" influence model of man; development of psychoanalytic method of free-association from hypnosis; 3 stages of infant as described by Freud	Break	Discussion of Id, Ego, and Superego--What are they?; Meaning of terms such as repression, sublimation, etc; primary relation; definition of relations in groups; importance in understanding influence model of man; "Hawthorne effect"	

TOPIC PROFILE . WEEK OF: 5-3 READING: Brown

0 Min. 30 60 90 120 Min.

BLOOMFIELD (Zonis substitute for first part)	Discussion of course to date; review of concepts and relationships between authors	Discussion of "Hawthorne effect"	Housekeeping (discussion of term paper grading)	Discussion of cognitive dissonance, congruity theory, balance model, and dissonance model; application to Asch effect; game theory and educational value of playing political games; attitude change and influence model
WINTER	Housekeeping	Discussion of attitudes; example of Calder sculpture and people at M.I.T.; reference to Brown; discussion of scale and dissonance and balance models; where does time fit on scale	Discussion of Asch experiment; change of public opinion vs. private opinion; dissonance model discussed further; Brown reading discussed; comparison of models made	
FEIN	Discussion of Brown; reference to three models, congruence, dissonance, and balance; composition of attitude and attitude change; practical examples mentioned	Discussion of relation of Freud to Brown; lines of defense; oversimplification in Brown's models; others besides balancing mechanisms; examples of attitude change to compensate for wrong behavior--example of Nazis		
SEASHOLES	Discussion of models in Brown; are they reasonable; dissonance, congruence, and balance theory; influence of cross-pressures; do cross-pressures affect our method of government; importance of politics to individual Americans	Break	TAT	

5-3

0 Min. | 30 | 60 | 90 | 120 Min.

RIGGS CARNEY	House-keeping	Discussion of various models in Brown; definition of congruity, dissonance, and balance; examples of models--Rockefeller, Eisenhower, Krushchev; basis for theories; limits of models; "over-persuasion;" discussion of Mrs. Keech issue (flood prophecy); movement on scale	Break	Discussion of advertising business and use of attitude models; consistency of preference; Freudian notion of ambivalence in relation to Brown; correctness of Brown's explanations; models as oversimplifications of specifics	
DEXTER (e)	Discussion of lecture material; models of attitudes; congruence, balance, dissonance; real-life applications; shortcomings of theories; social science and dissonance	Break	Housekeeping	Discussion of Viet Nam and dissonance; President Johnson--does he have dissonance?; marine--what are his; student teach-in leader--what are his?	
DEXTER (h)	Discussion of lecture material; read Art Buchwald article "Down with Mothers;" rationalization in Freud and attitude models in Brown; dissonance, congruence, balance; real-life applications	Break	Discussion of negro and feeling of inferiority; tantrums and dissonance; tolerance	Papers dis-cussed	Discussion on Berelson reading; Viet Nam and dissonance; dissonance in President Johnson, marine, and new Americans
JOHNSON	No Data				
ZONIS	Discussion of Asch and Merei articles; methodology, what happened, results, what does it mean; relation to problem of initiating change without weakening traditions too much	Discussion of why people smoke in relation to balance model and influence process	Break	Discussion of models; content of reading for week; mention of Osgood, Fastinger, Rosenberg, others; criticisms of Fein's lecture	

0 Min. 30 60 90 120 Min.

BLOOMFIELD	Housekeeping	Discussion of Berelson and voting; traditionalists vs. behaviorists; voting as opposed to empirical, inductive analysis; pol. sci. in U. S. taught as law in rest of world (hist. and sociology); M.I.T. and voting study	Break and discussion of writing ability and cross-registering at Harvard and B. U.	Discussion and Aristotle, study in ruling; Voting took quantitative study and applied it to traditionalists; value of study		
WINTER	Housekeeping	Discussion of Berelson; was book interesting; validity of conclusions; usefulness of conclusions	Discussion of function of voting in Amer. political system; alliance to group or ind.; why do people vote?	Discussion of reasons for people voting for candidate; identification, hero image; 1960 and 1964 elections--how are last minute changes to be explained; new issues and their role in voting; political system; cross-pressures; what are variables involved; can vote be predicted?		
FEIN	Results of Fein's social studies course discussed	Discussion of voting and figures in Berelson study; look at some past elections to determine why people vote or not; problem of imperfect knowledge; should voting be restricted to political scientists?	Discussion of values (personal) and effect on vote; resolution of conflict of values implies no vote; political compromise; value judgement legitimate?	Discussion of prediction of vote by simulation--reference to Pool; knowledge needed to do this; use of balance, congruence, dissonance models; distribution of public opinions		
SEASHOLES	Discussion of grocery store model from lecture; are voters rational; what is correct model to use; two-party system and cross-pressures	Class asked if they were going to vote; what are costs and benefits of it; FDR election sampling discussed	Break	People of low SES vote less than high SES; gratification and voting	Discussion of how a person builds up political affiliation; is this rational choice; majority opinion; how can this be used to win most votes	Research project

5/10

0 Min. 30 60 90 120 Min.

RIGGS CARNEY	Housekeeping on Final	Discussion of Voting; relation to models in Brown; application to 1960 election; difference between Brown's hypothetical models and Berelson's empirical data; conclusions in Voting--are they valid; social pressures; how do individuals behave?	Break	Discussion of Berelson study; was Elmira a good sample; what are constants assumed in study; variables; is it sufficient; does it have further applicability	
DEXTER (e)	No Data				
DEXTER (h)	Discussion of TAT's with Mrs. Rogers	Research projects and organization	Discussion of Berelson; relation to lecture; past elections discussed to tie in with Berelson's conclusions	Break	Discussion of Voting; importance of primary group; what makes people vote; relation of Pool computer study to dating studies such as Operation Match; attitudes
JOHNSON	No Data				
ZONIS	Discussion of values teacher should give students; Berelson study; content with respect to democracy; is it valid?	Discussion of "The 480"--different categories of voters using computers; can simulation produce predictions of vote; workings of politics--rational or not; does voter and politician make value or technical judgements?	Break	Discussion of effects of education on voting behavior; conclusions in Berelson--are they valid; relation of Voting to Brown's models and behavior studies	

TOPIC PROFILE WEEK OF: 5-17 READING: Weber

0 Min. 30 60 90 120 Min.

BLOOMFIELD	Housekeeping	Discussion of Weber "Politics as a Vocation;" methodology; definitions of leader; role of leader; bureaucracy; state; relation to world order; DeGaulle; Congo situation	Break	Housekeeping; Final exam	Discussion of Weber and mode of traditional leadership; charisma and charismatic leader; examples JFK and IKE; discussion of Aristotle and forms of gov't; Rousseau; discussion of Nigeria, etc.
WINTER	Housekeeping (return of research projects and discussion on that and final)	Discussion of Weber; definition of legitimation; is it right; what is it like in U.S.A., USSR, Montegrano, South Africa; crisis in legitimation--example of U.S. Civil War; how does leg. relate to rapid planned progressive change; charismatic leaders; state	Discussion of traditional and what it means; compared to rational acceptance; legitimation of negro vote in south; Balgat and acceptance; traditional legitimation and charismatic leader		
FEIN	Discussion of Weber; legitimation of authority; tradition, legality, charisma; charismatic leaders--Christ, Hitler, Frank Sinatra discussed; relative quality; importance	Discussion of authority; time-bound aspect; charisma needed to break tradition; Rogers exp. in Peru with boiling water; ethics of absolute ends; McNamara speech of 5/18/66--is it valid?	Discussion of format of final exam	No Data	
SEASHOLES	Weber's characterization of civil servants; "ideal politician;" state; absolutism--responsibility; how Weber would view Snick in Mississippi	Discussion of mass society; what causes it to go off in one direction like Nazis; tied in with what causes acceptance of charismatic leader like Hitler	General comments on course; final exam	No Data	

5-17

0 Min. | 30 | 60 | 90 | 120 Min.

RIGGS CARNEY	Discussion of Weber; concept of "ideal politician;" models in Split Level Trap; problems in translation of Weber; charisma and leader; "ethic of responsibility;" "absolute ethic;" ends and means; development of societies; Balgat; development of political parties	Break	Discussion of interaction of political leadership and primary group processes; cross-pressures; power structure in U.S.; ethical question; automation crisis--where will decisions be made	Discussion of how course fits together	
DEXTER (e)	Discussion of political leadership--voting studies; "Politics as a Vocation," Weber; relevance to common man and reaction to Viet Nam; means versus ends; public vs. private good	Break	House-keeping	Grading; relative vs. absolute	Discussion of "free professional;" charisma, demagogue; might makes right; legitimation; traditional vs. charismatic ruling
DEXTER (h)	Discussion of final exam organization	Discussion of lecture (Pool); value of it; value of political polls; leadership and example of Roosevelt; Weber's pessimistic conclusion about politics; charismatic leaders	Break	Projects and output from them	Discussion of Weber's ethical responsibility; parietal hours and ethics of resp.; parietals and absolute ethics; is U.S. gov't legitimate in Weber's terms; Stalin, Brigham Young; what does legitimation depend on; should lawyers take better account of ethic of resp. than scientists, etc.
JOHNSON	No Data				
ZONIS	Projects	Discussion of educational process in terms of why class doesn't do reading	Discussion of Weber; McNamara speech 5/18/66 to demonstrate continuing use of Weber's ideas; politics, state, as defined; legitimation; charisma, legal aspects, tradition, and why people obey state	Break	Discussion of Weber--characteristics of politician vs. administrator and where is responsibility; who gets into politics--why; means and ends; role of state in legitimation of violence

PERCENTAGE ATTENDANCE

	Bloom-field	Winter	Fein	Sea-sholes	Carney/Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	.95	--	--	1.00	.81	--	.96	.94
Weber 2-22	.96	.78	.80	.71	.94	.95	.81	--	.92	.86
McClelland 3-1	.81	.89	.86	--	.38	.80	.70	.79	.96	.83
Rogers 3-8	.85	.35	.80	.64	.94	.85	.95	.84	.81	.84
Mosteller 4-5	.81	.56	.56	.57	.82	--	.40	.24	.76	.58
Smith 4-12	.88	.64	.61	.58	.68	.60	.66	.75	.88	.71
Lasswell 4-19	.52	.76	.65	.42	.79	.95	.66	--	.92	.73
Asch 4-26	1.00	.68	.78	.92	.84	.68	.65	--	.80	.79
Brown 5-3	.88	.68	.55	1.00	.79	.95	.70	--	.88	.80
Berelson 5-10	.64	.88	.77	.75	.63	--	.77	--	.80	.75
Weber 5-17	.92	.84	.68	.33	.79	.78	.59	--	.84	.76
Total 2-15--4-5	.86	.76	.78	.64	.90	.90	.74	.63	.85	.80
Total 4-12--5-17	.81	.75	.71	.67	.75	.79	.67	.75	.85	.75
TOTAL 2-15--5-17	.83	.75	.73	.66	.81	.84	.73	.66	.85	.77

NUMBER OF STUDENT-TEACHER EXCHANGES

	Bloomfield	Winter	Fein	Seasholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	33 (37)	--	--	49 (45)	69 (54)	--	81 (93)	519 (229)
Weber 2-22	26 (30)	137 (132)	50 (46)	59 (27)	85 (63)	56 (49)	46 (36)	--	61 (67)	576 (450)
McClelland 3-1	29 (28)	138 (153)	57 (50)	--	77 (53)	46 (34)	12 (11)	78 (54)	83 (96)	626 (479)
Rogers 3-8	21 (21)	149 (158)	49 (45)	92 (40)	77 (57)	38 (27)	23 (21)	51 (38)	106 (104)	607 (511)
Mosteller 4-5	26 (25)	139 (96)	42 (25)	182 (67)	29 (19)	--	114 (42)	82 (19)	72 (53)	561 (342)
Smith 4-12	32 (36)	167 (137)	138 (99)	84 (30)	66 (44)	47 (29)	60 (37)	47 (29)	45 (51)	663 (492)
Lasswell 4-19	26 (17)	85 (83)	20 (15)	109 (28)	17 (13)	7 (7)	54 (33)	--	8 (10)	265 (206)
Asch 4-26	21 (27)	106 (93)	37 (34)	112 (63)	48 (39)	55 (37)	34 (19)	--	77 (79)	465 (391)
Brown 5-3	28 (32)	109 (95)	74 (50)	89 (55)	34 (26)	36 (31)	32 (20)	--	122 (138)	535 (447)
Berelson 5-10	33 (27)	97 (109)	38 (33)	124 (57)	80 (49)	--	34 (23)	--	105 (108)	509 (406)
Weber 5-17	13 (15)	123 (132)	51 (39)	180 (37)	29 (22)	57 (41)	61 (31)	--	117 (126)	554 (443)
Total 2-15--4-5	103 (104)	563 (539)	182 (203)	322 (134)	274 (192)	134 (155)	234 (164)	201 (111)	404 (413)	2480 (2015)
Total **4-12--5-17**	149 (154)	676 (649)	349 (270)	662 (270)	265 (193)	188 (145)	270 (163)	47 (29)	469 (512)	3000 (2385)
TOTAL **2-15--5-17**	250 (258)	2481 (1188)	518 (473)	982 (404)	532 (385)	378 (300)	506 (327)	247 (140)	872 (925)	5480 (4400)

A student-teacher exchange is defined as the set consisting of a continuous series of student participations and teacher responses.

$$\text{Corrected figure} = (\text{raw figure}) \times \frac{\text{mean seminar size (all seminars)}}{\text{number present in seminar}}$$

Mean seminar size=21.7

NUMBER OF EXTENDED STUDENT-TEACHER EXCHANGES (5 or more parts)

	Bloomfield	Winter	Fein	Seasholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	5 (6)	--	--	13 (12)	19 (15)	--	16 (19)	118 (52)
Weber 2-22	4 (5)	12 (12)	8 (7)	10 (5)	11 (8)	20 (18)	14 (11)	--	23 (26)	118 (92)
McClelland 3-1	6 (6)	23 (25)	16 (14)	--	19 (13)	23 (15)	0 (0)	4 (3)	18 (21)	127 (97)
Rogers 3-8	5 (5)	33 (35)	7 (6)	14 (6)	14 (10)	20 (16)	9 (8)	3 (2)	17 (16)	124 (104)
Mosteller 4-5	2 (2)	25 (17)	8 (5)	5 (2)	11 (7)	--	30 (11)	8 (2)	10 (7)	102 (53)
Smith 4-12	**2 (2)**	**26 (21)**	**24 (17)**	**11 (4)**	**12 (8)**	**18 (11)**	**8 (5)**	**3 (2)**	**6 (7)**	**104 (77)**
Lasswell 4-19	**6 (4)**	**27 (26)**	**1 (1)**	**4 (1)**	**5 (4)**	**4 (4)**	**13 (8)**	**--**	**0 (0)**	**62 (48)**
Asch 4-26	**2 (2)**	**51 (44)**	**4 (4)**	**11 (6)**	**2 (2)**	**20 (13)**	**2 (1)**	**--**	**18 (18)**	**107 (90)**
Brown 5-3	**5 (6)**	**54 (47)**	**10 (6)**	**11 (7)**	**1 (1)**	**18 (16)**	**2 (1)**	**--**	**14 (16)**	**120 (100)**
Berelson 5-10	**4 (3)**	**71 (80)**	**7 (6)**	**28 (13)**	**8 (5)**	**--**	**11 (7)**	**--**	**18 (18)**	**165 (132)**
Weber 5-17	**2 (2)**	**9 (10)**	**1 (1)**	**39 (8)**	**3 (2)**	**22 (16)**	**14 (7)**	**--**	**13 (14)**	**75 (60)**
Total 2-15--4-5	18 (18)	93 (89)	34 (38)	31 (13)	54 (38)	73 (61)	64 (45)	13 (7)	87 (89)	**490 (398)**
Total **4-12--5-17**	**18 (19)**	**238 (228)**	**45 (35)**	**95 (39)**	**30 (22)**	**78 (60)**	**48 (29)**	**3 (2)**	**67 (73)**	**637 (507)**
TOTAL **2-15--5-17**	**36 (37)**	**333 (317)**	**88 (73)**	**127 (52)**	**83 (60)**	**152 (121)**	**114 (74)**	**16 (9)**	**153 (162)**	**1120 (905)**

Corrected figure= (raw figure) x $\frac{\text{mean seminar size (all seminars)}}{\text{number present in seminar}}$

Mean seminar size=21.7

NUMBER OF STUDENT-STUDENT EXCHANGES

	Bloomfield	Winter	Fein	Seasholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	3 (3)	--	--	4 (4)	1 (1)	--	1 (1)	20 (9)
Weber 2-22	2 (2)	26 (25)	5 (5)	18 (9)	--	1 (1)	2 (2)	--	(4)	61 (48)
McClelland 3-1	4 (4)	22 (24)	2 (2)	--	9 (6)	--	2 (2)	(5)	2 (2)	60 (45)
Rogers 3-8	8 (8)	22 (23)	4 (4)	22 (9)	8 (6)	2 (2)	1 (1)	1 (1)	1 (1)	65 (55)
Mosteller 4-5	4 (4)	12 (8)	0 (0)	22 (8)	(0)	--	3 (1)	0 (0)	2 (1)	43 (22)
Smith 4-12	**1 (1)**	**14 (12)**	**3 (2)**	**3 (1)**	**8 (5)**	**5 (3)**	**5 (3)**	**3 (2)**	**1 (1)**	**41 (30)**
Lasswell 4-19	**0 (0)**	**8 (8)**	**0 (0)**	**0 (0)**	**3 (2)**	**1 (1)**	**3 (2)**	**--**	**0 (0)**	**17 (13)**
Asch 4-26	**4 (5)**	**23 (20)**	**0 (0)**	**14 (8)**	**0 (0)**	**9 (6)**	**0 (0)**	**--**	**2 (2)**	**49 (41)**
Brown 5-3	**2 (2)**	**9 (8)**	**1 (1)**	**3 (2)**	**0 (0)**	**3 (3)**	**0 (0)**	**--**	**4 (4)**	**24 (20)**
Berelson 5-10	**1 (1)**	**7 (8)**	**2 (2)**	**6 (3)**	**3 (2)**	**--**	**0 (0)**	**--**	**4 (4)**	**25 (20)**
Weber 5-17	**1 (1)**	**21 (24)**	**0 (0)**	**20 (4)**	**0 (0)**	**6 (4)**	**0 (0)**	**--**	**0 (0)**	**41 (33)**
Total 2-15--4-5	18 (18)	84 (80)	13 (14)	63 (26)	17 (12)	8 (7)	10 (7)	11 (6)	9 (9)	**221 (179)**
Total **4-12--5-17**	**9 (10)**	**83 (80)**	**6 (5)**	**44 (18)**	**12 (9)**	**22 (17)**	**8 (5)**	**3 (2)**	**10 (11)**	**192 (157)**
TOTAL **2-15--5-17**	**27 (28)**	**168 (160)**	**23 (19)**	**107 (44)**	**29 (21)**	**30 (24)**	**19 (12)**	**14 (8)**	**19 (20)**	**418 (336)**

A student-student exchange is defined as the set consisting of any number of continuous student-student interactions.

Corrected figure=(raw figure) x $\frac{\text{mean seminar size(all seminars)}}{\text{number present in seminar}}$

TOTAL NUMBER OF STUDENT PARTICIPATIONS

	Bloom-field	Winter	Fein	Sea-sholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	55 (61)	--	--	105 (97)	121 (95)	--	160 (186)	994 (439)
Weber 2-22	35 (40)	247 (239)	92 (85)	394 (182)	121 (89)	109 (95)	94 (74)	--	143 (158)	(962)
McClelland 3-1	62 (60)	296 (328)	111 (98)	--	117 (115)	84 (62)	43 (28)	120 (83)	163 (188)	1235 (962)
Rogers 3-8	57 (58)	345 (365)	77 (71)	318 (132)	115 (114)	86 (67)	55 (51)	68 (50)	182 (176)	1290 (1084)
Mosteller 4-5	42 (41)	299 (207)	59 (38)	295 (109)	65 (42)	--	226 (83)	139 (32)	118 (87)	1238 (639)
Smith 4-12	**43 (49)**	**324 (266)**	**193 (141)**	**114 (41)**	**195 (129)**	**136 (84)**	**123 (76)**	**72 (44)**	**64 (72)**	**1230 (902)**
Lasswell 4-19	**39 (26)**	**207 (201)**	**23 (18)**	**156 (40)**	**29 (22)**	**14 (14)**	**107 (66)**	--	**10 (12)**	**514 (399)**
Asch 4-26	**34 (44)**	**309 (269)**	**60 (55)**	**209 (118)**	**72 (59)**	**151 (77)**	**46 (26)**	--	**166 (170)**	**972 (818)**
Brown 5-3	**49 (55)**	**286 (249)**	**115 (71)**	**140 (86)**	**45 (34)**	**84 (73)**	**67 (41)**	--	**177 (200)**	**970 (809)**
Berelson 5-10	**46 (38)**	**306 (345)**	**62 (54)**	**314 (145)**	**127 (79)**	--	**60 (40)**	--	**79 (81)**	**980 (782)**
Weber 5-17	**17 (20)**	**233 (263)**	**65 (50)**	**485 (99)**	**45 (35)**	**114 (82)**	**92 (47)**	--	**68 (73)**	**838 (669)**
Total 2-15--4-5	196 (199)	1189 (1139)	291 (325)	1085 (451)	513 (360)	387 (321)	471 (331)	299 (165)	778 (795)	5025 (4086)
Total 4-12--5-17	**244 (232)**	**1664 (1593)**	**504 (389)**	**1298 (529)**	**491 (358)**	**429 (330)**	**492 (296)**	**72 (44)**	**555 (608)**	**5520 (4379)**
TOTAL 2-15--5-17	**417 (431)**	**2865 (2732)**	**852 (714)**	**2380 (980)**	**999 (718)**	**820 (651)**	**968 (627)**	**370 (209)**	**1325 (1403)**	**10550 (8465)**

A student participation is each individual student comment or question.

Corrected figure=(raw figure) x $\frac{\text{mean seminar size(all seminars)}}{\text{number present in seminar}}$

Mean seminar size=21.7

PERCENTAGE OF STUDENTS PRESENT PARTICIPATING IN CLASS DISCUSSION IN ANY WAY

	Bloomfield	Winter	Fein	Seasholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	.46	--	--	.85	1.00	--	.76	.74
Weber 2-22	.48	.71	.65	1.00	.88	.84	.76	--	.54	.70
McClelland 3-1	.62	.75	.87	--	.87	.69	.64	.87	.88	.75
Rogers 3-8	.59	.83	.65	1.00	.63	.65	.55	.88	.76	.71
Mosteller 4-5	.62	.73	.71	1.00	.93	--	1.00	.80	.63	.76
Smith 4-12	.41	.69	.79	1.00	.93	.93	.91	.83	.59	.73
Lasswell 4-19	.69	.74	.33	1.00	.53	.40	.75	--	.22	.50
Asch 4-26	.48	.65	.50	1.00	.69	.93	.82	--	.85	.70
Brown 5-3	.50	.77	.83	1.00	.60	.68	.83	--	.90	.75
Berelson 5-10	.62	.64	.53	1.00	.92	--	.61	--	.75	.71
Weber 5-17	.30	.76	.80	1.00	.53	1.00	.90	--	.86	.72
Total 2-15--4-5	.57	.76	.61	1.00	.82	.76	.68	.86	.72	.73
Total **4-12--5-17**	.50	.71	.62	1.00	.69	.75	.80	.83	.69	.67
TOTAL 2-15--5-17	.53	.73	.61	1.00	.73	.76	.78	.85	.70	.69

RATIO OF VOLUNTARY TO INVOLUNTARY INVOLVEMENTS (excluding student-student exchanges)

	Bloomfield	Winter	Fein	Seasholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	37:0	--	--	5:1	18:1	--	35:1	17:1
Weber 2-22	3:0	32:1	46:0	7:1	63:0	15:1	4:1	--	71:0	19:1
McClelland 3-1	35:0	153:0	50:0	--	53:0	34:0	13:0	26:1	6:1	60:1
Rogers 3-8	25:0	157:0	45:0	6:1	57:0	26:1	25:0	17:1	105:0	44:1
Mosteller 4-5	25:0	96:0	5:1	67:0	19:0	--	6:1	18:1	21:2	25:1
Smith 4-12	**38:1**	**138:0**	**11:1**	**3:1**	**44:0**	**13:1**	**4:1**	**28:1**	**50:1**	**17:1**
Lasswell 4-19	**2:1**	**83:0**	**15:0**	**3:1**	**13:0**	**7:0**	**4:1**	**--**	**10:0**	**10:1**
Asch 4-26	**27:0**	**93:0**	**34:0**	**7:1**	**39:0**	**5:1**	**2:1**	**--**	**6:1**	**12:1**
Brown 5-3	**32:0**	**95:0**	**49:1**	**6:1**	**26:0**	**4:1**	**4:1**	**--**	**22:1**	**17:1**
Berelson 5-10	**27:0**	**109:0**	**33:0**	**7:1**	**49:0**	**--**	**11:1**	**--**	**26:1**	**30:1**
Weber 5-17	**14:0**	**132:0**	**12:1**	**3:1**	**21:1**	**41:0**	**5:1**	**--**	**125:1**	**22:1**
Total 2-15--4-5	88:0	133:1	50:1	10:1	192:0	12:1	33:1	21:1	38:1	29:1
Total 4-12--5-17	**25:1**	**650:0**	**22:1**	**5:1**	**192:1**	**9:1**	**4:1**	**28:1**	**21:1**	**17:1**
TOTAL **2-15--5-17**	**40:1**	**237:1**	**29:1**	**6:1**	**384:1**	**11:1**	**5:1**	**22:1**	**26:1**	**22:1**

An involvement is defined as a student-teacher exchange or a student participation which is not part of a student-teacher exchange.

PERCENTAGE OF THOSE STUDENTS PRESENT INVOLVED FREQUENTLY (5 or more times)

	Bloomfield	Winter	Fein	Seasholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	.08	--	--	.15	.29	--	.28	.20
Weber 2-22	.08	.52	.25	.80	.25	.16	.18	--	.21	.27
McClelland 3-1	.24	.54	.32	--	.53	.13	--	.33	.28	.38
Rogers 3-8	.23	.65	.25	.78	.25	.12	0	.13	.29	.30
Mosteller 4-5	.10	.47	.71	1.00	.00	--	.75	.40	.19	.29
Smith 4-12	.09	.56	.50	.57	.23	.23	.50	.17	.18	.30
Lasswell 4-19	.00	.32	.67	.60	.67	.00	.33	--	.00	.12
Asch 4-26	.08	.57	.17	.36	.19	.29	.09	--	.24	.23
Brown 5-3	.18	.47	.33	.50	.20	.16	.00	--	.32	.27
Berelson 5-10	.19	.49	.18	.66	.50	--	.08	--	.30	.33
Weber 5-17	.04	.57	.20	1.00	.13	.14	.30	--	.33	.38
Total 2-15--4-5	.16	.56	.20	.85	.26	.14	.33	.25	.25	.29
Total 4-12--5-17	.10	.49	.23	.56	.21	.15	.21	.17	.23	.26
TOTAL 2-15--5-17	.12	.52	.21	.67	.23	.14	.27	.23	.24	.27

PERCENTAGE OF THOSE STUDENTS PRESENT INVOLVED INFREQUENTLY (2 or fewer times)

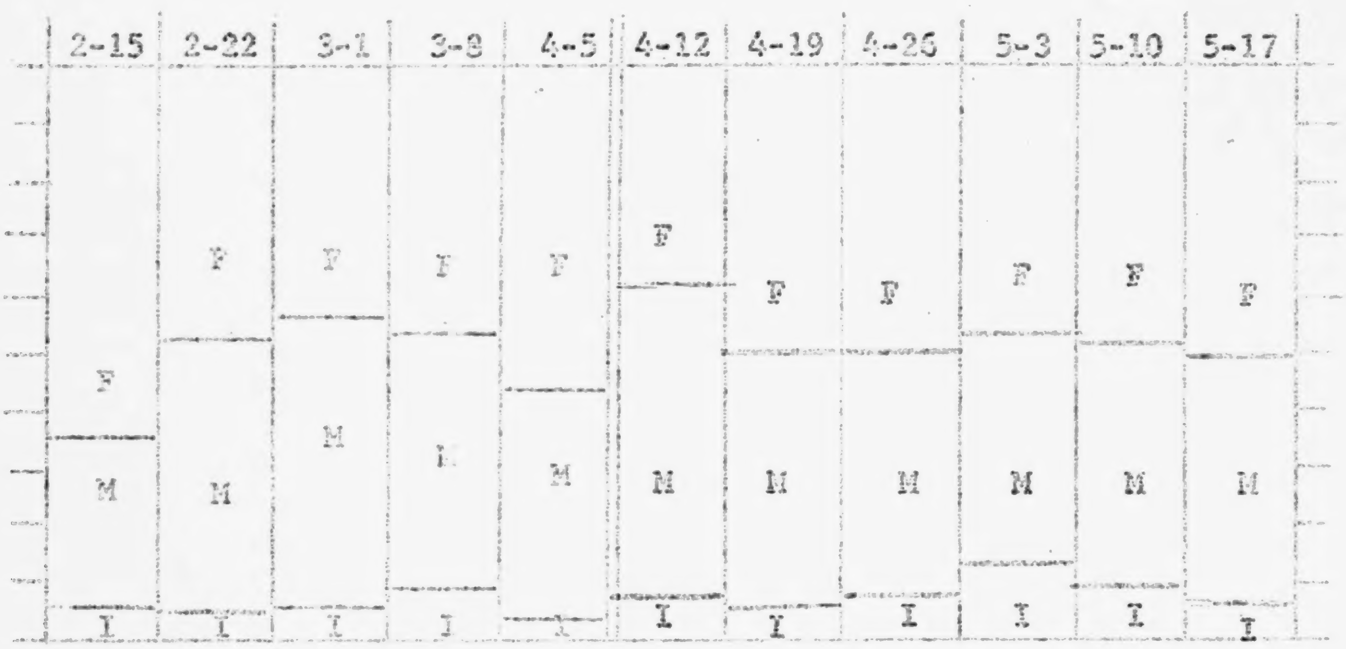
	Bloom-field	Winter	Fein	Sea-sholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	.71	--	--	.55	.41	--	.60	.58
Weber 2-22	.76	.33	.60	.10	.44	.53	.47	--	.58	.51
McClelland 3-1	.67	.42	.58	--	.40	.62	--	.40	.48	.47
Rogers 3-8	.68	.17	.65	.11	.69	.65	.85	.56	.48	.55
Mosteller 4-5	.76	.33	.72	.00	.93	--	.13	.20	.62	.56
Smith 4-12	.73	.77	.21	.43	.38	.46	.25	.58	.77	.50
Lasswell 4-19	.77	.37	.87	.00	.73	1.00	.58	--	.91	.73
Asch 4-26	.64	.47	.66	.27	.75	.36	.82	--	.60	.58
Brown 5-3	.73	.29	.42	.33	.66	.63	.83	--	.45	.55
Berelson 5-10	.69	.35	.65	.11	.25	--	.69	--	.65	.51
Weber 5-17	.91	.38	.73	.00	.87	.78	.30	--	.38	.61
Total 2-15--4-5	.72	.32	.65	.07	.61	.58	.40	.44	.55	.53
Total 4-12--5-17	.74	.38	.60	.23	.63	.67	.59	.58	.63	.58
TOTAL 2-15--5-17	.73	.35	.63	.17	.62	.63	.51	.48	.60	.56

PERCENTAGE OF CLASS TIME DOMINATED BY STUDENTS

	Bloom-field	Winter	Fein	Sea-sholes	Carney/ Riggs	(e) Dexter	(h) Dexter	Johnson	Zonis	TOTAL
Banfield 2-15	--	--	.20	--	--	--	--	--	.32	.25
Weber 2-22	.27	.72	.19	.47	.33	.24	.24	--	.31	.35
McClelland 3-1	.36	.58	.36	--	.38	.23	.56	.41	.29	.52
Rogers 3-8	.25	.74	.20	.26	.39	.16	.19	.41	.28	.32
Mosteller 4-5	.18	.54	.34	.48	.37	--	.17	.16	.19	.31
Smith 4-12	.24	.50	.23	.14	.27	.38	.30	.16	.08	.25
Lasswell 4-19	.22	.50	.04	.07	.12	.12	.31	--	.08	.17
Asch 4-26	.20	.64	.17	.48	.20	.20	.18	--	.20	.27
Brown 5-3	.19	.46	.28	.22	.18	.24	.15	--	.31	.26
Berelson 5-10	.18	.53.	.26	.39	.32	--	.15	--	.33	.31
Weber 5-17	.08	.57	.16	.33	.10	.26	.10	--	.15	.22
Total 2-15--4/5	.27	.65	.26	.40	.38	.21	.28	.33	.28	.34
Total **4-12--5-17**	.18	.56	.19	.28	.20	.23	.20	.16	.21	.25
4-15--5-17	.22	.58	.22	.32	.27	.22	.24	.29	.25	.29

Totals

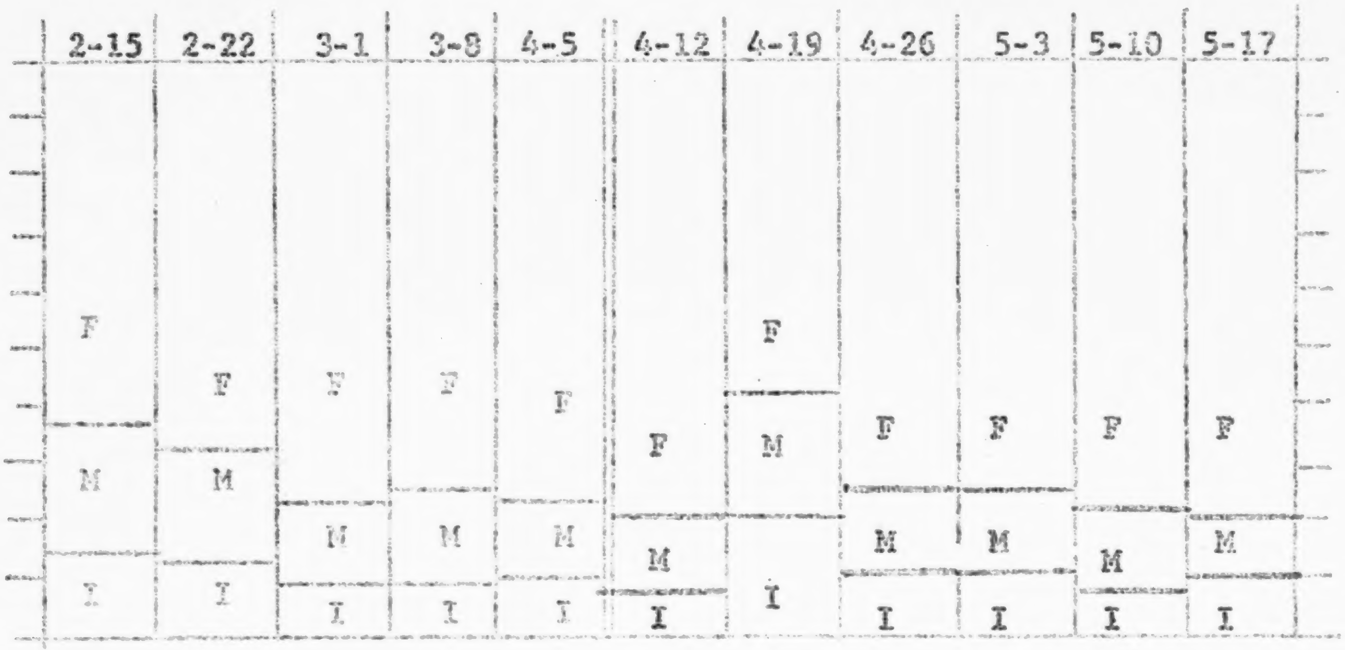
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: $\text{Percentile discussion} = \frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq-Mod-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: $\text{Percentile participation} = \frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

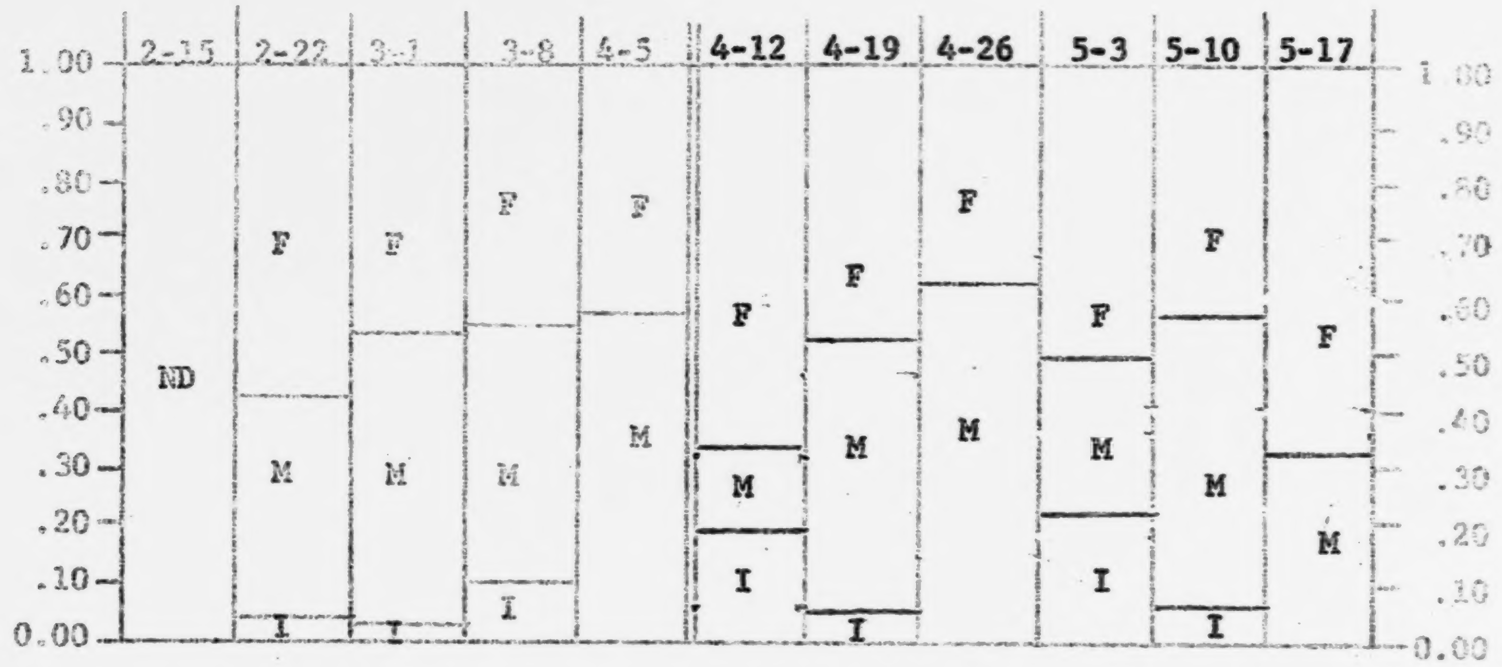
Participation by Summated Frequency Groups

Bloomfield

Note: f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc.	4-12	4-19	4-26	5-3	5-10	5-17	Pts.	% Disc
Jacobson, I.	--	f	f	f	m	11				f	m	f	f	a	m	13	
Marko, K.	--	m	f	f	f	11				f	i	f	f	f	i	14	
Bradish, P.	--	f	f	f	i	10	F	.13	.48	f	m	m	f	f	f	16	.51
Grochow, J.	--	i	i	f	m	7				i	i	i	i	i	i	6	
McPherson, J	--	i	m	i	f	7				a	a	i	i	a	i	3	
Kaufman, L.	--	i	f	m	i	7				i	i	m	i	m	i	8	
Joffee, I.	--	i	f	i	a	5				i	m	m	a	i	a	6	
Hegyard, A.	--	i	i	m	i	5				i	a	i	i	a	i	4	
Dudley, R.	--	m	i	a	m	5				a	a	m	a	f	i	6	
Dixon, H.	--	i	i	i	i	4				i	i	i	i	i	i	6	
Knight, A.	--	i	i	i	i	4				i	i	i	i	i	i	6	
Needham, T.	--	i	i	i	i	4				i	i	i	i	i	i	6	
Simon, I.	--	i	i	i	i	4				i	a	i	i	m	i	6	
Stanley, J.	--	i	i	i	i	4				m	i	i	f	i	i	9	
Walker, W.	--	i	i	i	i	4				i	a	i	a	i	i	4	
Miller, K.	--	i	i	i	i	4				a	i	m	i	a	i	5	
Henry, C.	--	i	i	i	i	4	M	58	.48	i	a	i	m	a	i	6	.35
Tatalay, M.	--	i	a	i	i	3				i	a	i	i	i	i	5	
Varteressia	--	i	a	i	i	3				m	a	m	i	a	i	6	
Millspaw, W	--	i	i	i	a	3				i	a	i	i	a	i	4	
Gaphardt, M	--	i	i	a	i	3				i	a	i	i	i	i	5	
Peruggi, R.	--	i	a	i	a	2				i	a	i	i	a	i	4	
Hughes, D.	--	i	i	a	a	2						DROP →					
Hamilton, W	--	i	a	a	a	1	I	29	.04	i	i	i	i	a	a	4	
Neal										i	i	i	i	i	i	6	
Reid										m	a	m	m	i	i	8	.14

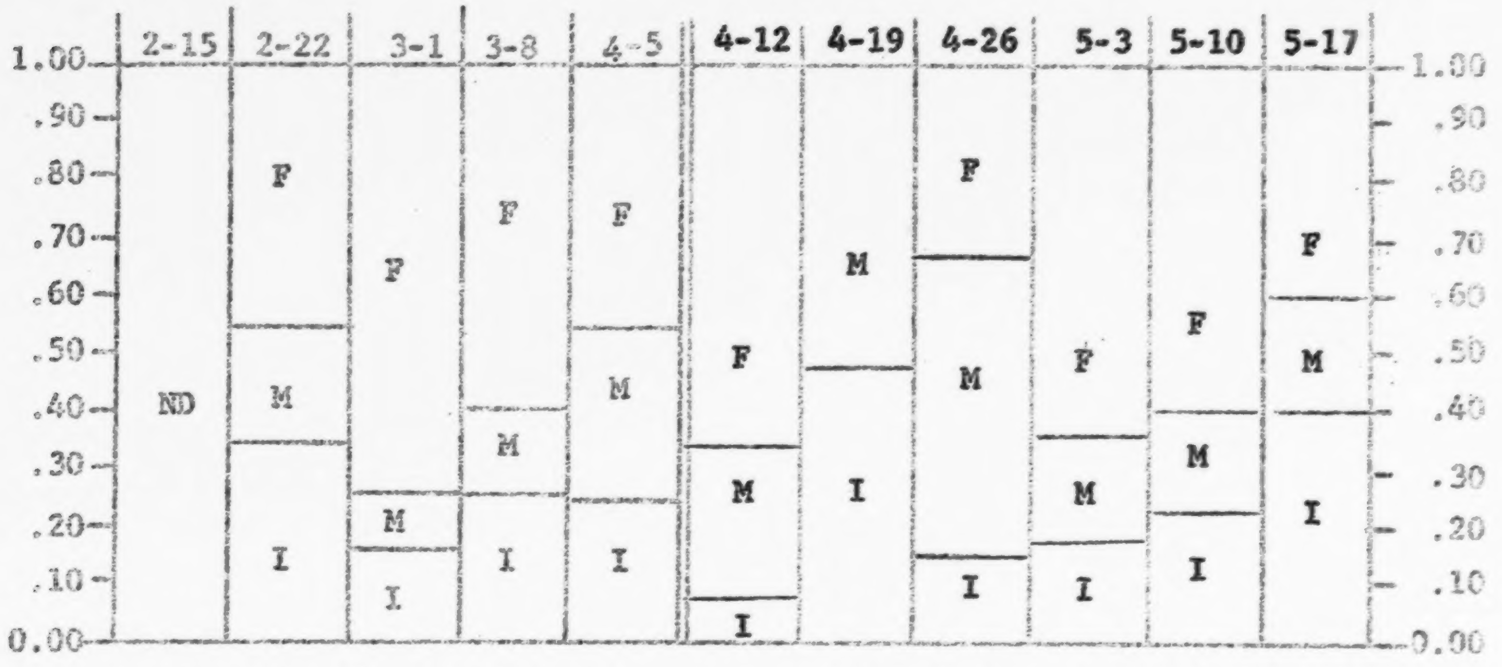
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: Percentile discussion = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: Percentile participation = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Participation by Summated Frequency Groups

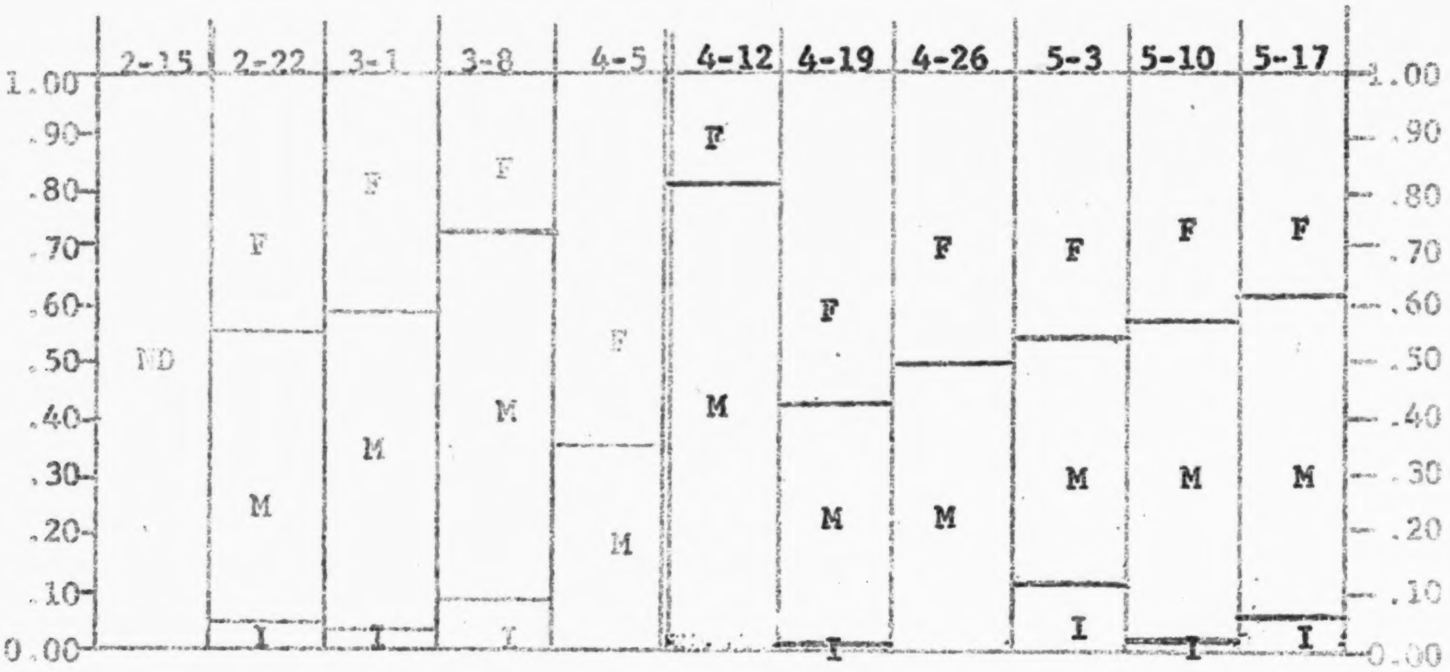
Winter

Note: f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc	4-12	4-19	4-26	5-3	5-10	5-17	Pts.	% Disc
Pack, D.	--	f	f	f	f	12				f	f	f	f	f	f	18	
Swerdlove, H	--	f	f	f	f	12				f	m	f	f	f	f	14	
Voss, C.	--	f	f	f	f	12				a	f	f	f	f	f	15	
Brothers, D	--	f	f	m	f	11				a	a	a	a	f	a	3	
Mokeda, A.	--	m	f	f	f	11	F	20	.42	a	m	f	f	f	f	14	.40
Gulmon, S.	--	f	f	f	a	9				f	m	f	f	m	f	16	
Iuzzolino, H	--	f	f	f	a	9				a	f	a	a	f	f	9	
Klein, A.	--	f	f	f	a	9				f	f	f	f	f	f	18	
Goldmark, H	--	f	f	f	a	9				f	m	f	f	f	f	17	
Nahmias, J.	--	a	f	f	f	9				a	i	f	i	f	i	9	
Falk, T.	--	f	f	a	f	9				f	f	a	a	a	a	6	
Tinkelman, R	--	f	i	m	m	8				f	i	a	m	f	f	12	
Roberto, J.	--	m	i	f	i	7				m	f	i	m	i	i	10	
Weissgerber	--	i	i	f	m	7				i	a	i	a	i	i	4	
Strohbeen, J	--	a	i	f	m	6				a	i	a	m	i	a	4	
Hella, K.	--	i	i	f	i	6				f	m	i	m	m	f	13	
Brown, R.	--	a	f	f	a	6	M	.48	.54	f	a	f	a	f	f	12	.56
Blankinship	--	a	m	f	a	5				a	a	a	a	i	a	1	
Spalding, J	--	f	i	i	a	5				i	i	a	a	i	i	4	
Chang, S.	--	i	a	m	i	4				a	i	a	i	i	i	4	
McFarren, J	--	i	i	i	i	4				i	i	i	i	a	i	5	
Ackerman, W	--	i	i	i	a	3				i	i	i	i	m	m	8	
Sturges, R.	--	a	i	m	a	3				i	a	i	i	i	i	5	
Ferris, G.	--	i	i	a	a	2					DROP						
Scott, R.	--	i	i	a	a	2	I	.32	06	a	a	i	f	i	f	8	
Shull										i	a	i	a	a	i	3	.04

Winter

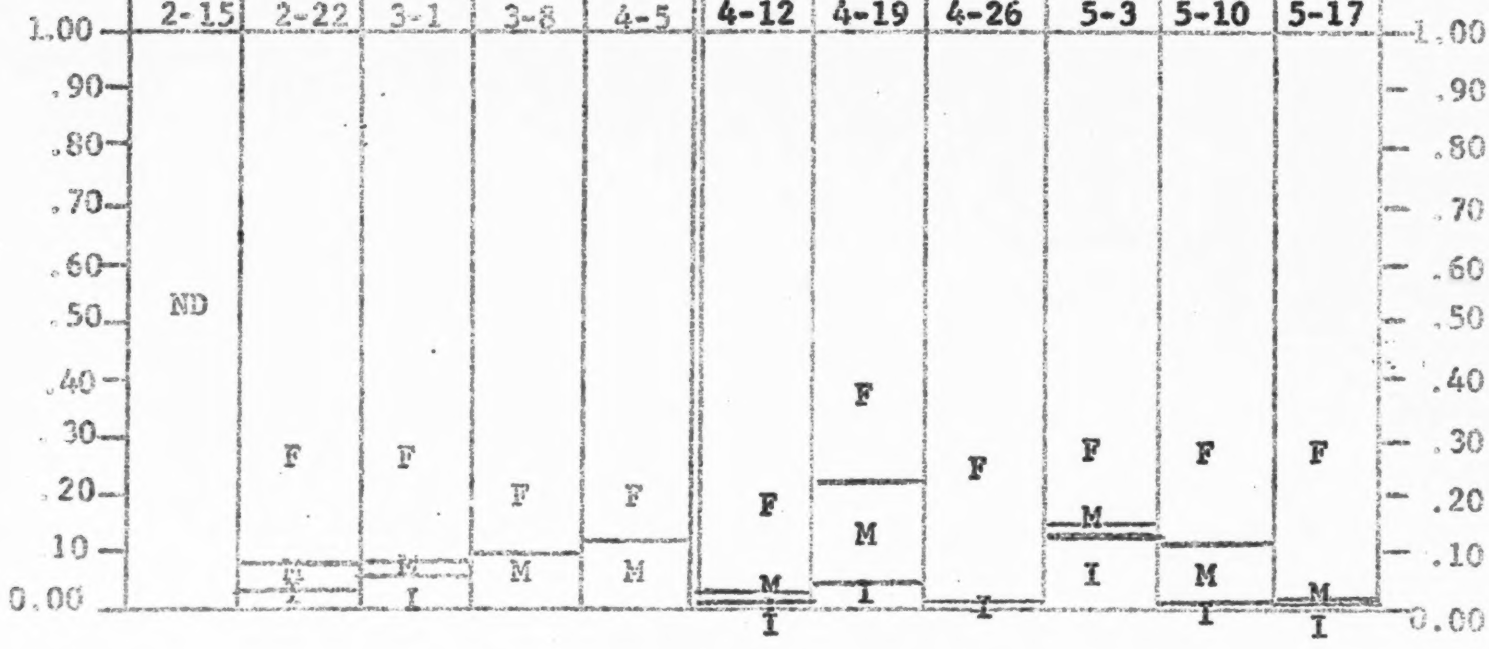
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: Percentile discussion= $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: Percentile participation= $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

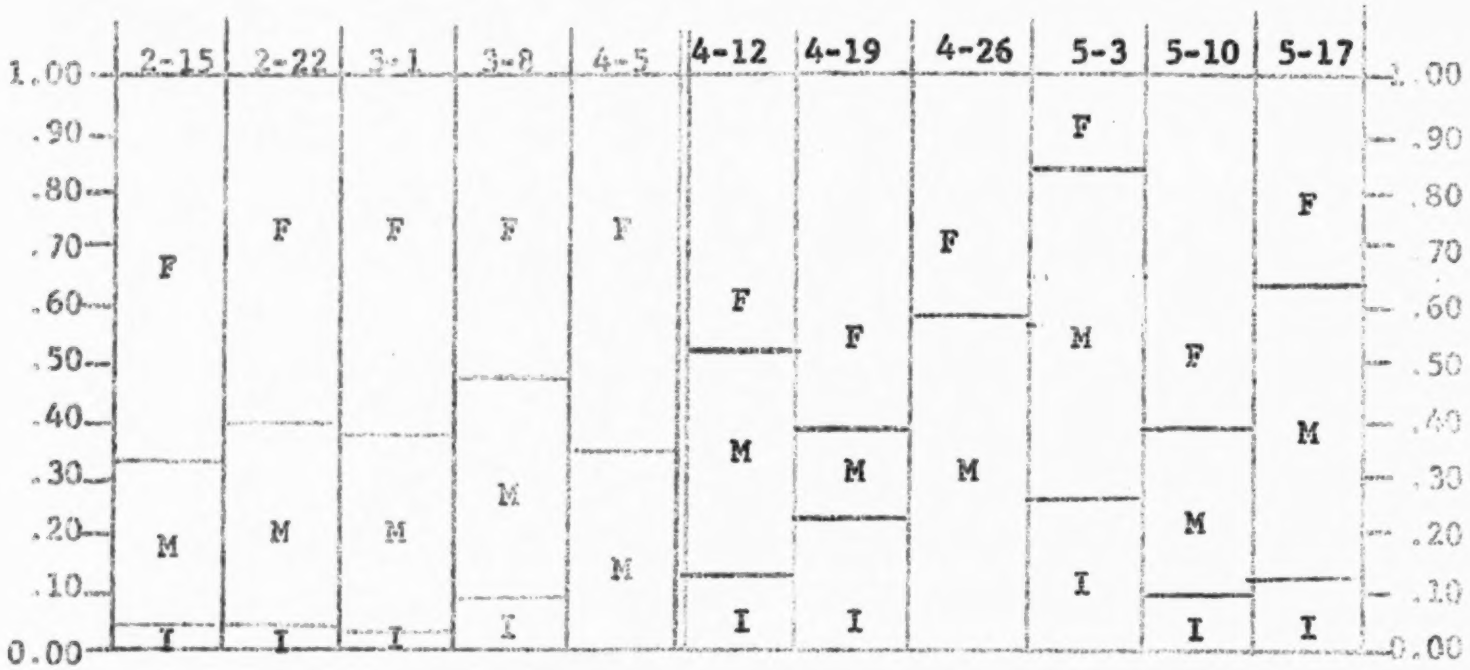
Participation by Summated Frequency Groups

Fein

Note: f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc	4-12	4-19	4-26	5-3	5-10	5-17	Pts.	% Disc.
Goldner, E.	f	f	f	f	m	14				f	a	f	a	f	f	13	
Silverman, J	m	m	f	f	f	13				a	f	m	a	f	i	9	
Morse, K.	a	f	f	f	m	11				f	a	m	f	f	i	12	
Hawkins, N.	m	f	f	m	i	11				f	a	a	a	a	a	3	
Ebright, J.	f	f	m	i	i	10	F	.21	.60	f	i	i	→				.42
Weitz, E.	m	i	f	m	i	9				m	i	i	f	i	a	8	
Merry, G.	m	f	a	f	a	8				a	i	f	m	a	i	7	
Bowers, L.	i	m	i	i	m	7				m	i	i	i	i	a	6	
Merrill, R.	a	a	f	f	a	6				f	a	f	f	a	f	12	
Vanderlaan	i	f	a	i	i	6				a	i	i	i	i	a	4	
Anderson, B.	i	i	i	i	i	5				f	i	i	m	i	m	10	
Bash, A.	i	i	i	i	i	5				i	a	a	a	a	i	2	
Glen, D.	i	i	m	a	i	5				m	i	m	a	m	f	9	
Hurst, K.	i	i	i	i	i	5				i	i	i	i	m	i	7	
Mann, M.	i	i	i	i	i	5	M	.46	.36	i	a	i	a	i	i	4	.44
Jackson, S.	i	i	i	i	a	4				a	i	i	m	m	i	7	
Suraiya, T.	i	a	i	i	i	4				a	a	a	i	i	a	2	
Kispert, R.	i	i	a	i	a	3				a	i	i	i	a	i	4	
Melson, R.	i	a	i	i	a	3				a	a	i	a	i	i	3	
Swanson, J.	i	i	i	a	a	3				m	i	i	a	i	i	6	
Ellison, C.	i	a	a	a	a	1				f	i	a	f	i	i	9	
Swanson, D.	i	a	i	i	a	3				a	i	i	a	i	a	3	
Hynes, E.	i	i	a	a	a	2				DROP →							
Mitchell, G.	i	a	a	a	a	1	I	.33	.04	a	a	a	a	a	a	0	.14

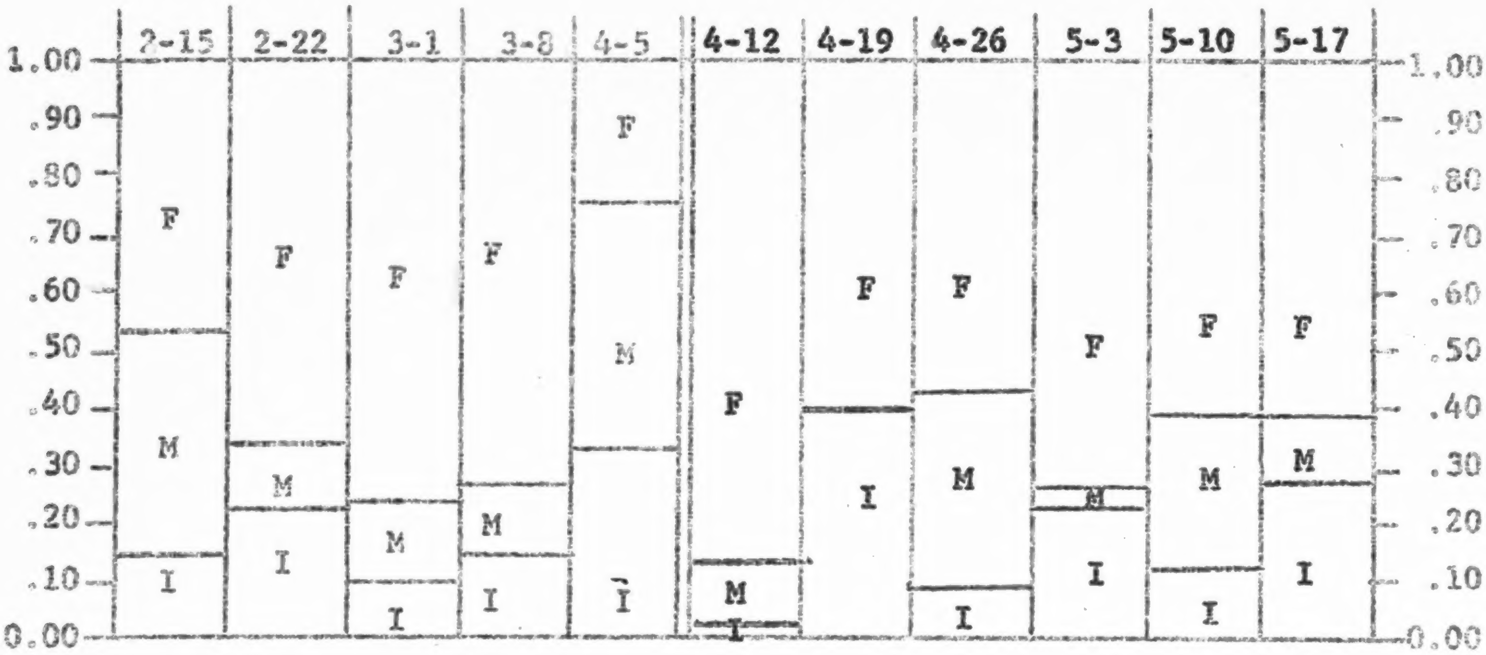
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: Percentile discussion = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: Percentile participation = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

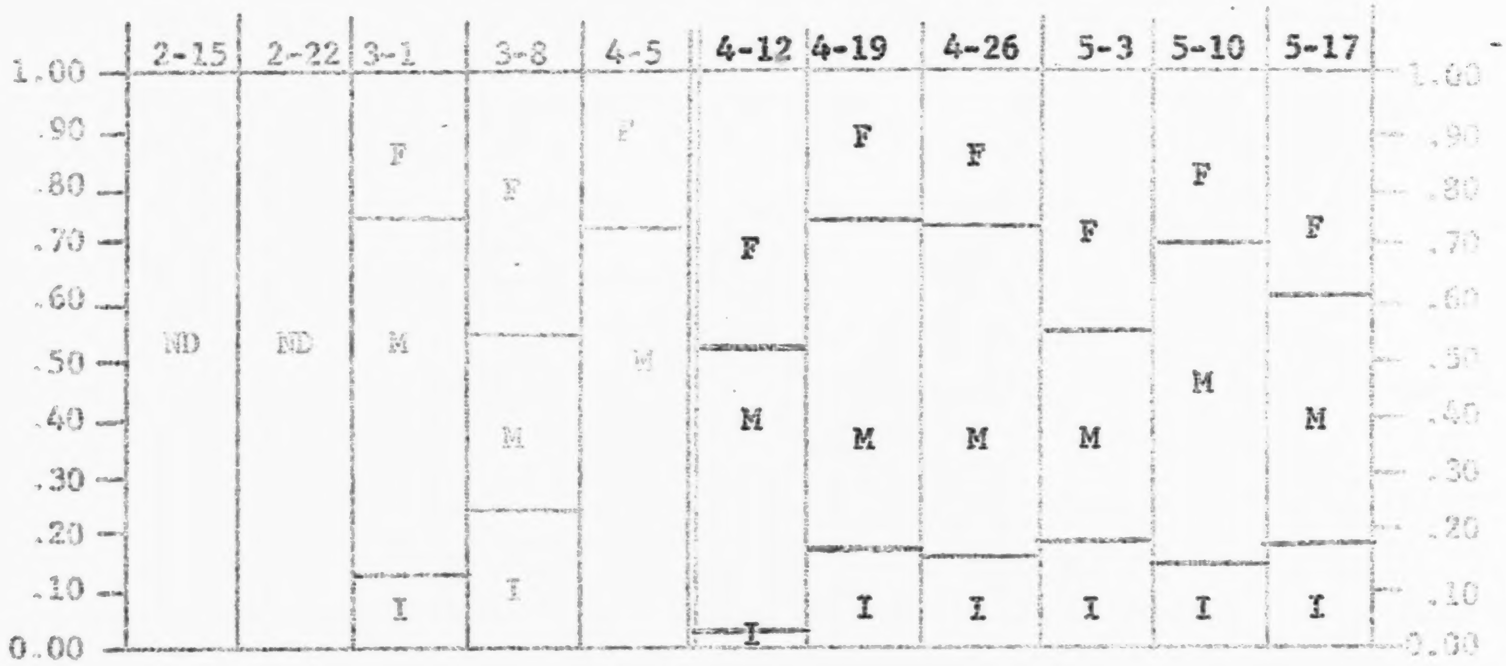
Participation by Summated Frequency Groups

Seasholes

Note: f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc	4-12	4-19	4-26	5-3	5-10	5-17	Pts.	% Disc.
Meyer, C.	--	--	f	f	f	9				f	a	m	f	f	a	11	
Onorato, W.	--	--	f	f	f	9				f	m	f	f	f	f	17	
Camph, D.	--	--	f	f	f	9	F	.23	.32	a	m	m	f	a	a	7	.33
Rifkin, R.	--	--	f	a	f	6				i	a	f	f	f	f	13	
Shipman, H.	--	--	f	a	f	6				i	f	m	f	m	a	11	
Wong, Y.	--	--	f	f	a	6				f	a	i	i	a	f	8	
Harger, A.	--	--	f	a	f	6				a	a	m	i	f	a	6	
Martland, C.	--	--	m	a	f	5				a	f	f	m	i	a	9	
Eloranta, P	--	--	a	f	f	6	M	.46	.56	f	a	i	i	f	a	8	.52
Lum, M.	--	--	i	f	a	4											
Blatz, F.	--	--	f	i	a	4				a	f	a	m	a	a	5	
Cohen, S.	--	--	a	f	a	3				a	a	f	f	m	a	8	
Kivisild, M.	--	--	a	m	a	2	I	.31	.12	i	a	i	i	f	f	9	.15

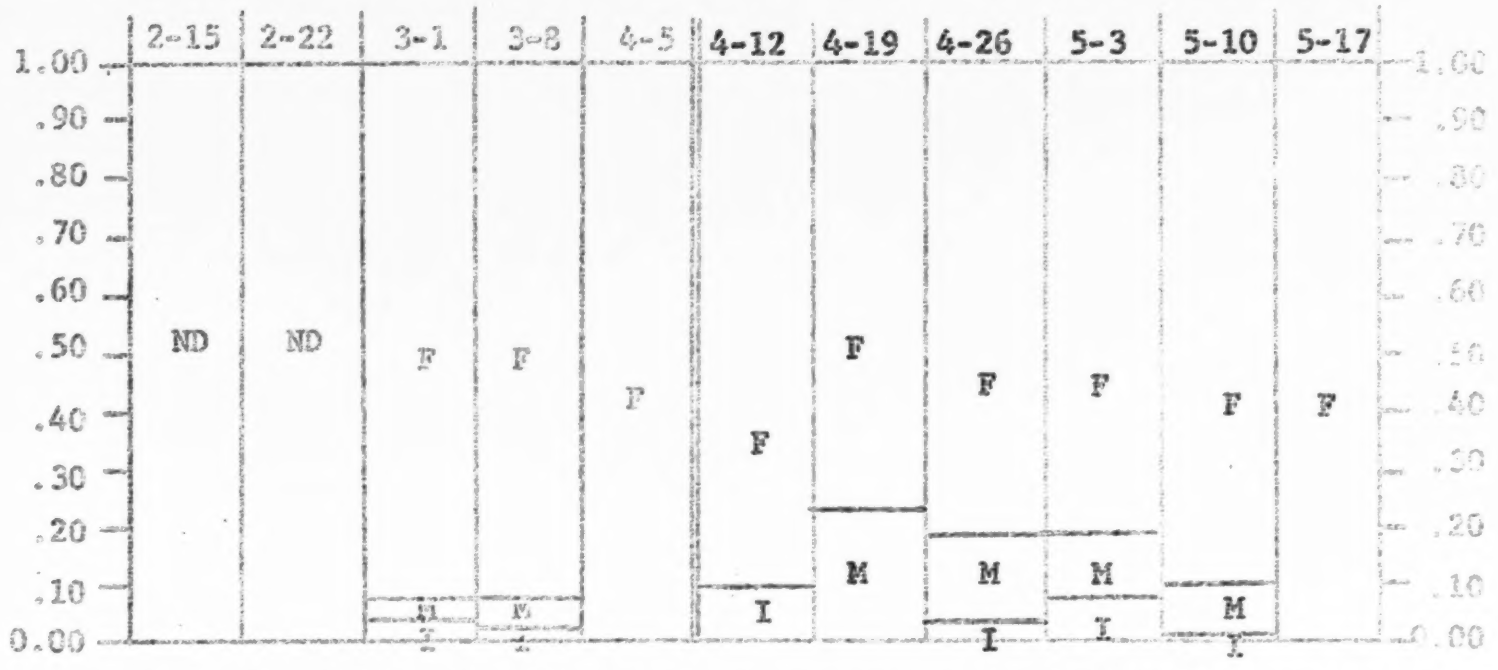
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: $$\text{Percentile discussion} = \frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: $$\text{Percentile participation} = \frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$$

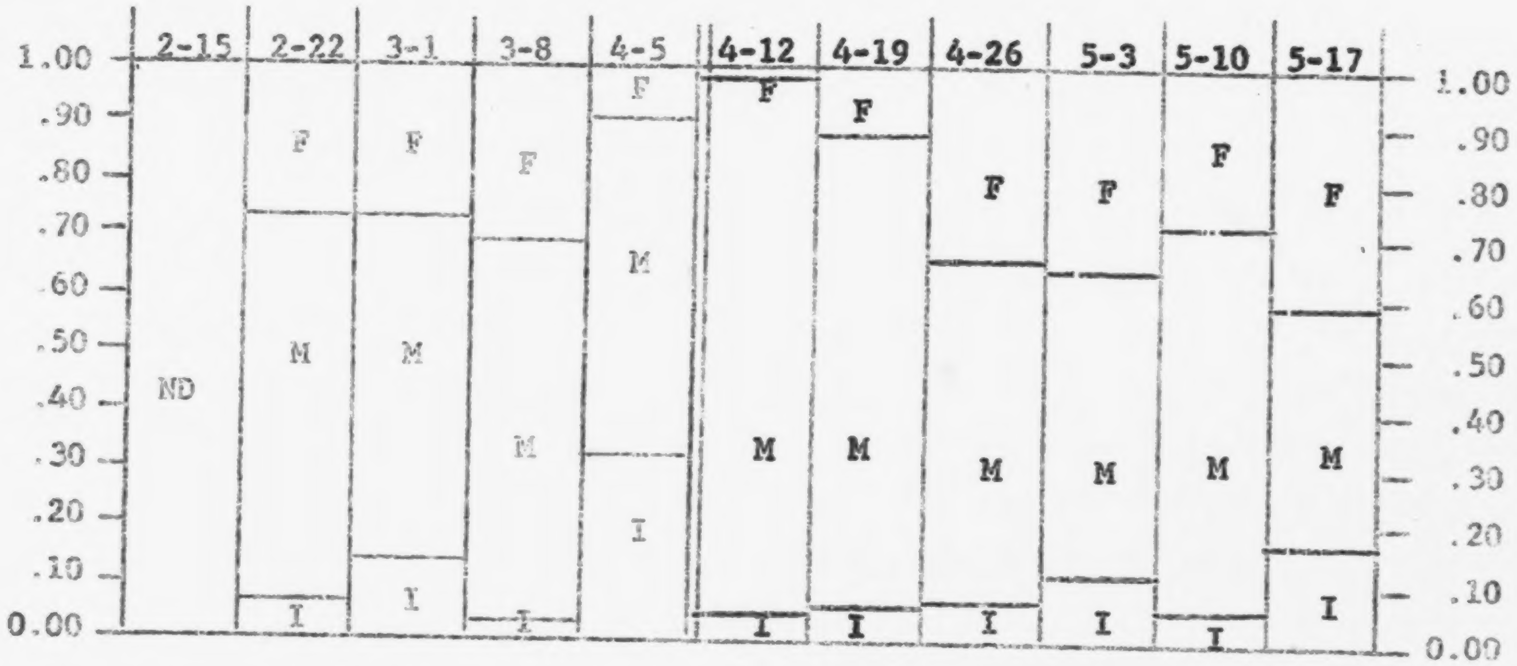
Participation by Summated Frequency Groups

Riggs/Carney

Note:
f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc	4-12	4-19	4-26	5-3	5-10	5-17	Pts.	% Disc
Hendricks, T	--	f	f	f	i	10				f	i	f	f	f	f	16	
Hanson	--	m	f	m	i	8	F	.10	.27	a	a	a	i	f	i	5	.23
Haynes, W.	--	f	f	i	a	7				m	i	i	i	a	i	6	
James, T.	--	f	a	f	i	7				a	a	i	i	f	a	5	
Tranen	--	f	i	f	a	7				f	m	i	i	f	f	13	
Koolish, R	--	m	f	i	i	7				a	i	i	a	f	i	6	
Phair, R.	--	m	f	i	a	6				i	a	f	f	f	a	10	
Glassman, A	--	i	m	i	m	6				i	i	m	i	m	i	8	
Nadeau, S.	--	a	f	i	i	5				a	f	f	f	m	i	12	
Jackson	--	m	f	a	a	5				f	m	a	a	m	i	8	
King	--	a	i	f	i	5				a	i	i	i	i	i	5	
Manugian, M.	--	m	i	i	i	5	M	.50	.64	i	i	i	m	a	i	6	.69
Chen, T.	--	i	f	a	a	4					DROP						
Brenner, R.	--	i	i	i	i	4				m	i	a	i	i	i	6	
Wong, K.	--	i	i	a	i	3				m	i	i	i	a	i	6	
Melanson, R	--	i	i	i	a	3				a	i	i	i	a	i	4	
Hirschfeld	--	a	i	i	i	3				i	i	i	a	a	i	4	
Wertz, J.	--	a	a	i	i	2				i	a	i	i	a	i	4	
Badzik, R.	--	i	a	i	a	2				a	i	i	i	i	a	4	
Speciner, M.	--	a	a	a	i	1	I	.40	.09	a	i	i	a	a	i	3	.08

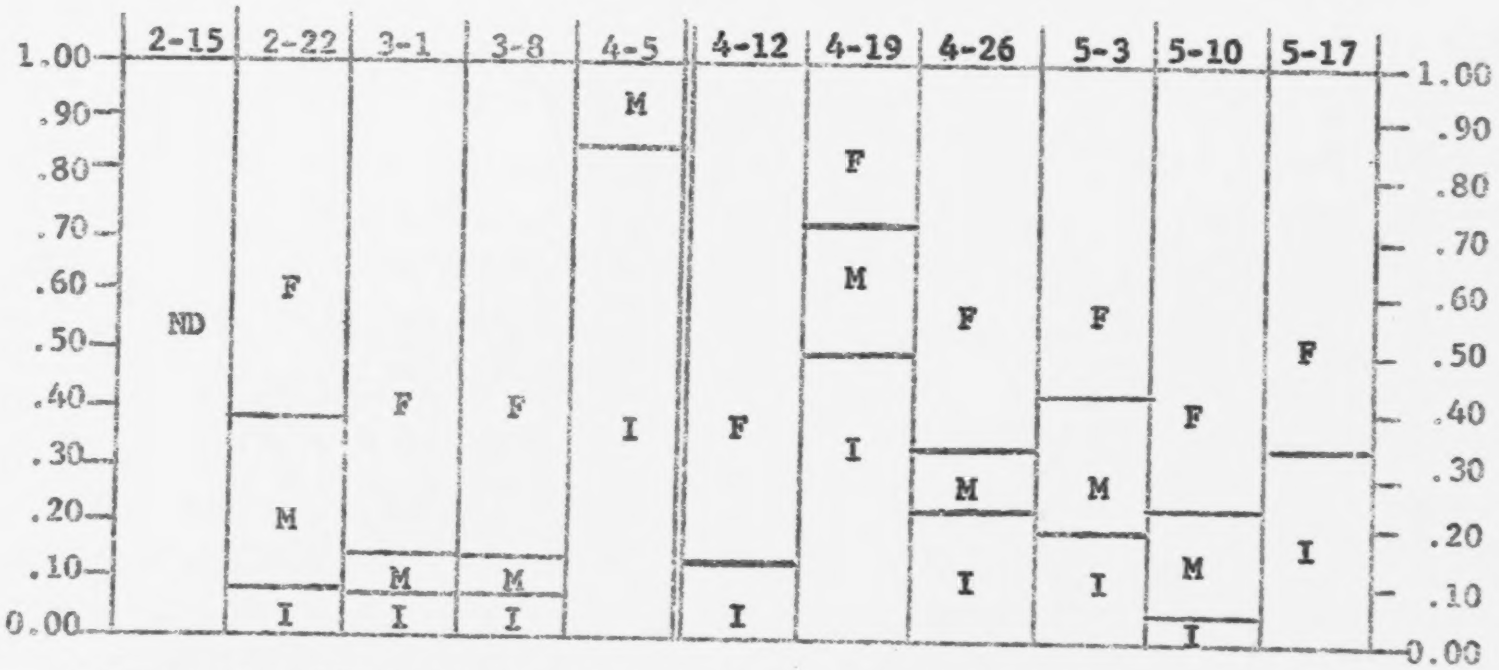
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: Percentile discussion = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: Percentile participation = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

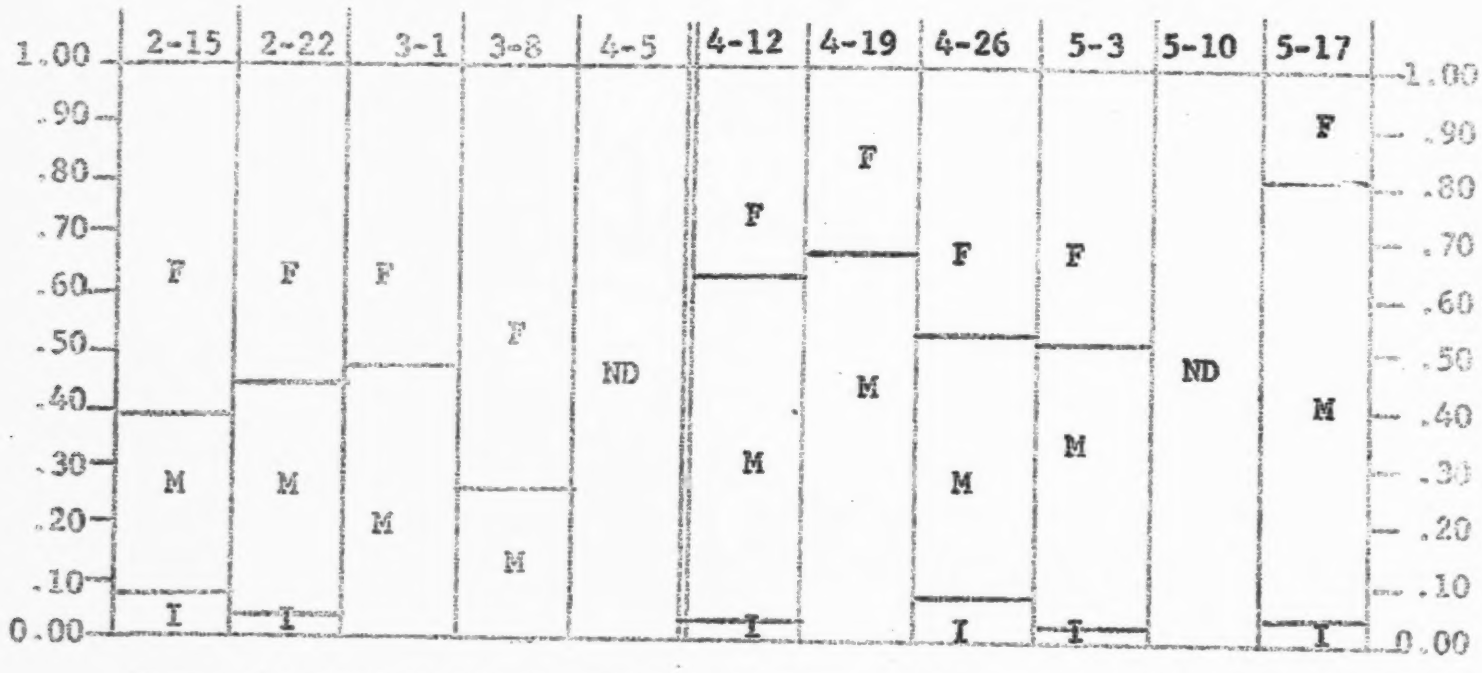
Participation by Summated Frequency Groups

Dexter (e)

Note: f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc	4-12	4-19	4-26	5-3	5-10	5-17	Pts.	% Disc.
Henderson, R	f	f	f	f	--	12				m	i	a	f		a	6	
Coppola, R.	m	m	f	m	--	9				f	i	m	i		i	8	
Brower, N.	f	f	i	i	--	8				m	i	i	f	N	i	8	
Frank, W.	m	m	i	f	--	8				i	i	i	i	O	i	5	
Marvus, F.	m	f	i	m	--	8				f	i	f	i		i	9	
Spitzer, C.	m	i	i	f	--	7	F	.30	.60	a	i	f	→				.38
Faccenda, R.	m	i	m	i	--	6				a	i	m	i	D	i	5	
Fox, R.	i	m	m	i	--	6				a	i	i	m	A	i	5	
Tashker, M.	m	i	i	m	--	6				a	i	a	i	T	f	5	
Lewis, S.	m	m	m	a	--	6				f	i	f	i	A	f	11	
Cohen, S.	i	i	m	i	--	5				a	i	m	i		i	5	
Ajadi, A.	i	i	i	i	--	4				i	i	a	i		a	3	
Pastors, C.	i	i	i	i	--	4				i	i	f	m		i	8	
Wood, L.	i	i	i	i	--	4				a	i	i	i		a	3	
Flamini, J.	i	m	a	i	--	4	M	.45	.36	a	i	a	f		m	6	.57
Chanoux, D.	i	i	i	a	--	3				a	i	i	i		i	4	
Demarest, W.	i	i	a	i	--	3				i	i	a	i		i	4	
Mountain, D.	i	a	i	i	--	3				a	i	m	a		i	4	
Stahl, D.	i	i	a	i	--	3				i	i	→					
Chanchani, A	i	i	a	a	--	2	I	25	.04	i	a	a	i		a	2	.05

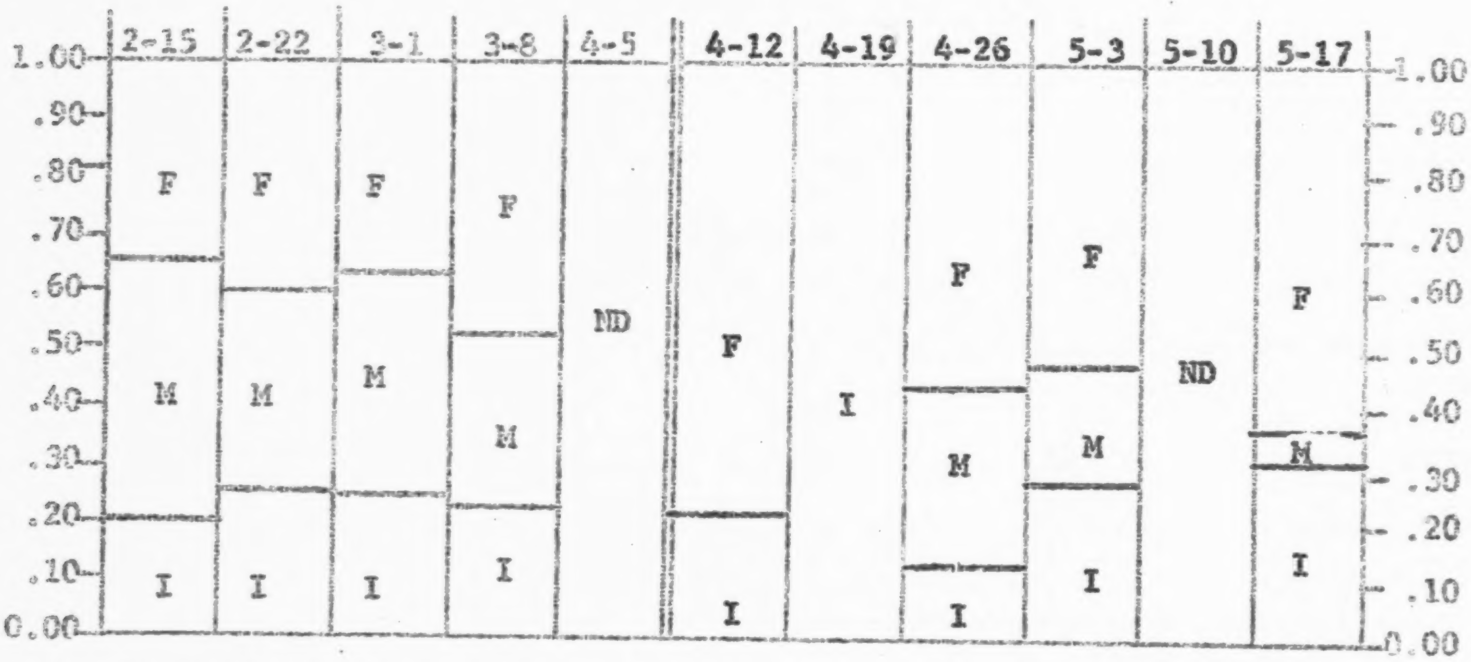
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: Percentile discussion = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: Percentile participation = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Participation by Summated Frequency Groups

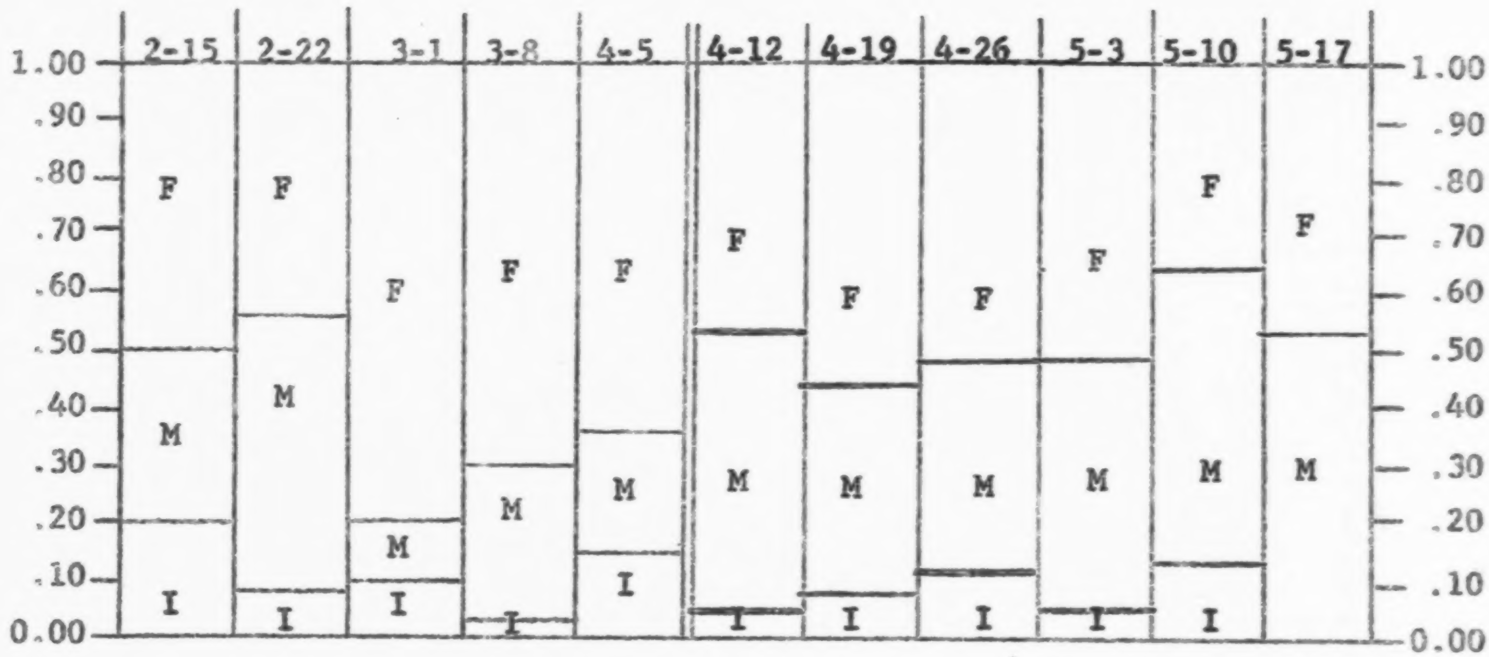
Dexter (h)

Note: f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc	4-12	4-19	4-26	5-3	5-10	5-17	Pts	% Disc.
Schaeffer, R	m	m	m	m	f	11				m	f	i	m	i	m	11	
Weidner, P.	f	f	m	m	a	10				f	f	m	m	i	i	12	
Lee, G.	f	i	f	m	a	9				f	i	a	i	m	a	8	
Fox, R.	f	i	i	i	f	9				m	m	a	i	i	m	10	
Romer, T.	i	f	i	i	f	9				f	i	→					
Downs, S.	i	i	m	i	f	8				i	i	f	i	i	f	10	
Asimov, D.	m	m	i	f	a	8	F	.35	.58	a	f	i	a	i	a	5	.49
Bresnik, B.	f	f	a	i	a	7				f	f	i	i	m	f	13	
Olsen, J.	a	f	i	i	m	7				f	a	i	i	i	m	8	
Kraus, Y.	m	a	f	m	a	7				a	a	a	m	f	m	7	
Lynn, C.	a	i	i	i	f	6				f	i	i	i	i	i	8	
Henshaw, P.	m	m	i	a	a	5				a	i	i	i	a	f	6	
Quinlan, A.	i	m	a	i	i	5	M	.30	.29	i	i	a	i	i	m	6	.44
Anderson, B	m	i	a	i	a	4				i	i	m	a	i	i	6	
Cervo, C.	m	a	i	i	a	4					DROP					→	
Donahue, J.	i	i	i	i	a	4				a	a	i	i	a	a	2	
Miller, P.	i	i	i	i	a	4					DROP					→	
Cockrell, S	a	i	i	i	a	3				a	a	i	a	a	a	1	
Weare, J.	a	a	a	a	f	3				a	a	a	a	a	a	0	
Walker, G.	i	a	i	i	a	3	I	.35	.13	m	m	i	i	m	a	8	.07

Dexter (h)

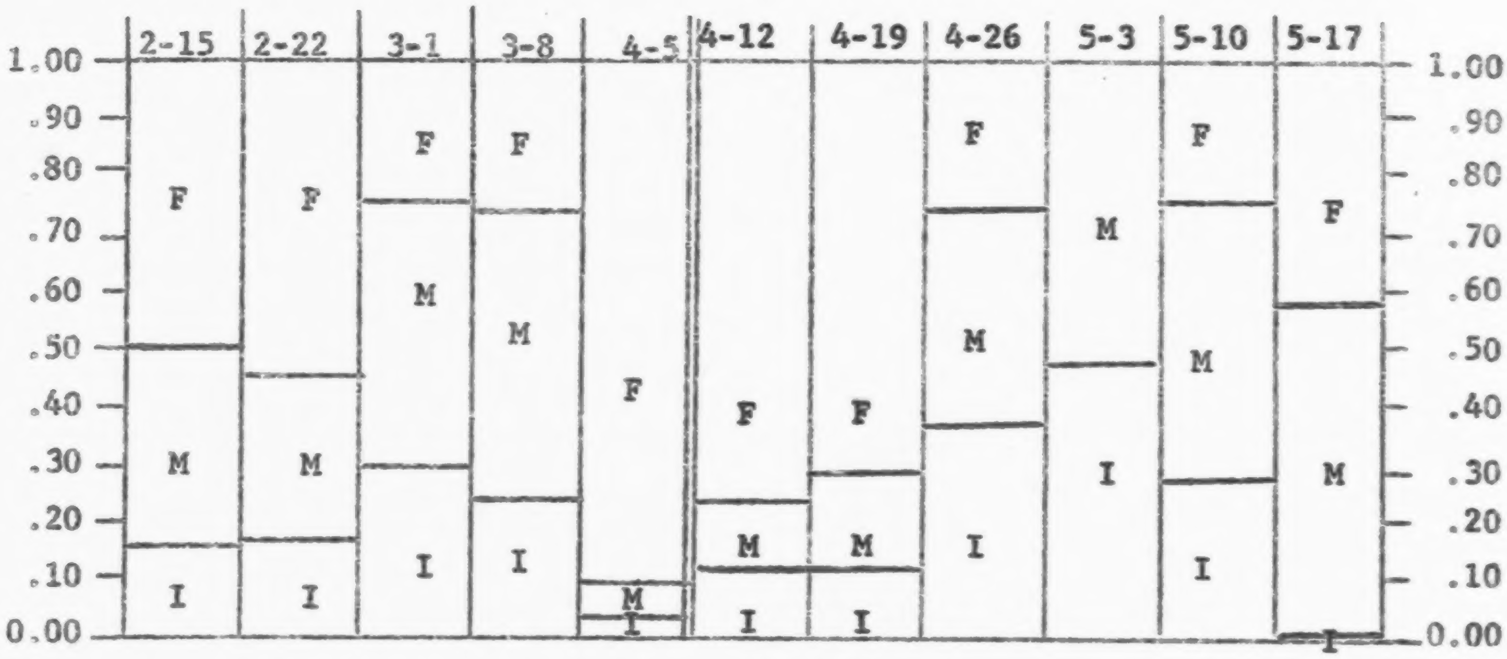
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: Percentile discussion = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: Percentile participation = $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

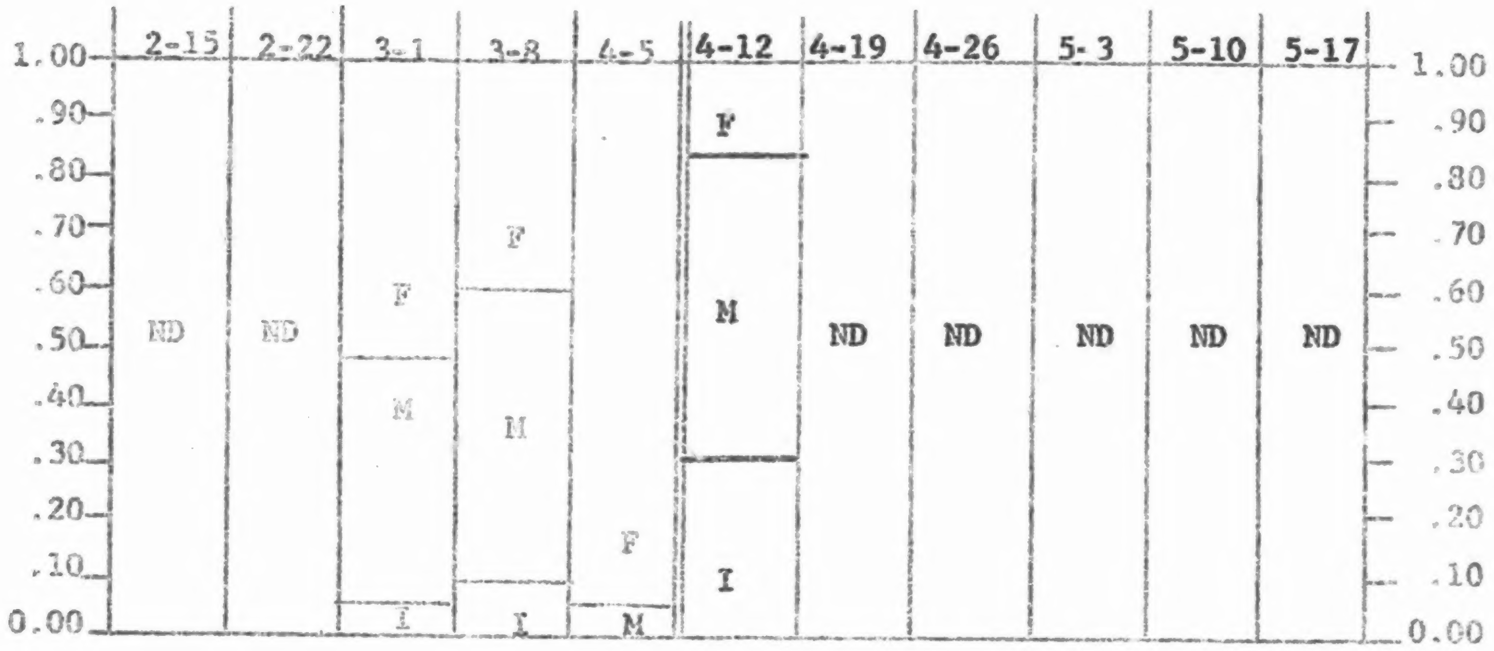
Participation by Summated Frequency Groups

Johnson

Note: f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc.	4-12	4-19	4-26	5-3	5-10	5-17	Pts.	% Disc.
Gilkes, A.	--	--	f	m	f	8				a							
Daddario, L	--	--	f	f	a	6					DROP					→	
Kramer, L.	--	--	m	i	m	5				a							
Toth, S.	--	--	f	m	a	5				m	NO		DATA	--			
Baker, D.	--	--	i	i	f	5	F	.26	.55	i							.18
Dancy, C.	--	--	f	i	a	4				i	STUDENT	OBSERVER					
Aldon, T.	--	--	m	m	a	4				f							
Hrones, J.	--	--	m	i	i	4				i	WAS	NOT	PRESENT				
Degnen, J.	--	--	i	m	a	3				a							
Freeman, E.	--	--	a	f	a	3				i							
Garvey, T.	--	--	f	a	a	3				f							
Pollock, P.	--	--	a	m	i	3	M	.37	.39	i							.52
Day, W.	--	--	i	i	a	2				f						→	
Sartin, D.	--	--	m	a	a	2				m							
Buck, M.	--	--	a	i	a	1				a							
Fellows, J.	--	--	a	i	a	1				i						→	
Mermel, S.	--	--	a	i	a	1				i						→	
Sawyer, A.	--	--	i	a	a	1				a	DROP					→	
Kotter, J.	--	--	a	a	a	0	I	.37	.06	a	DROP					→	.30

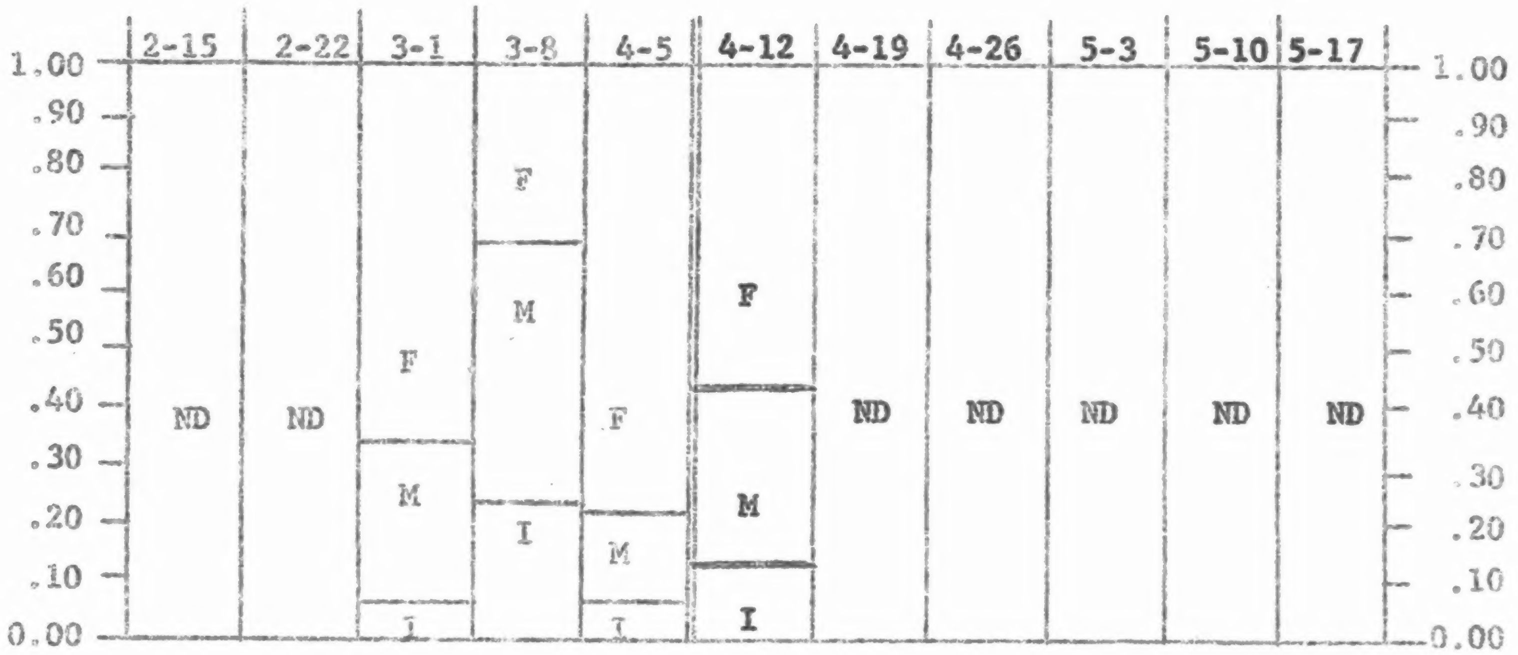
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: Percentile discussion= $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: Percentile participation= $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

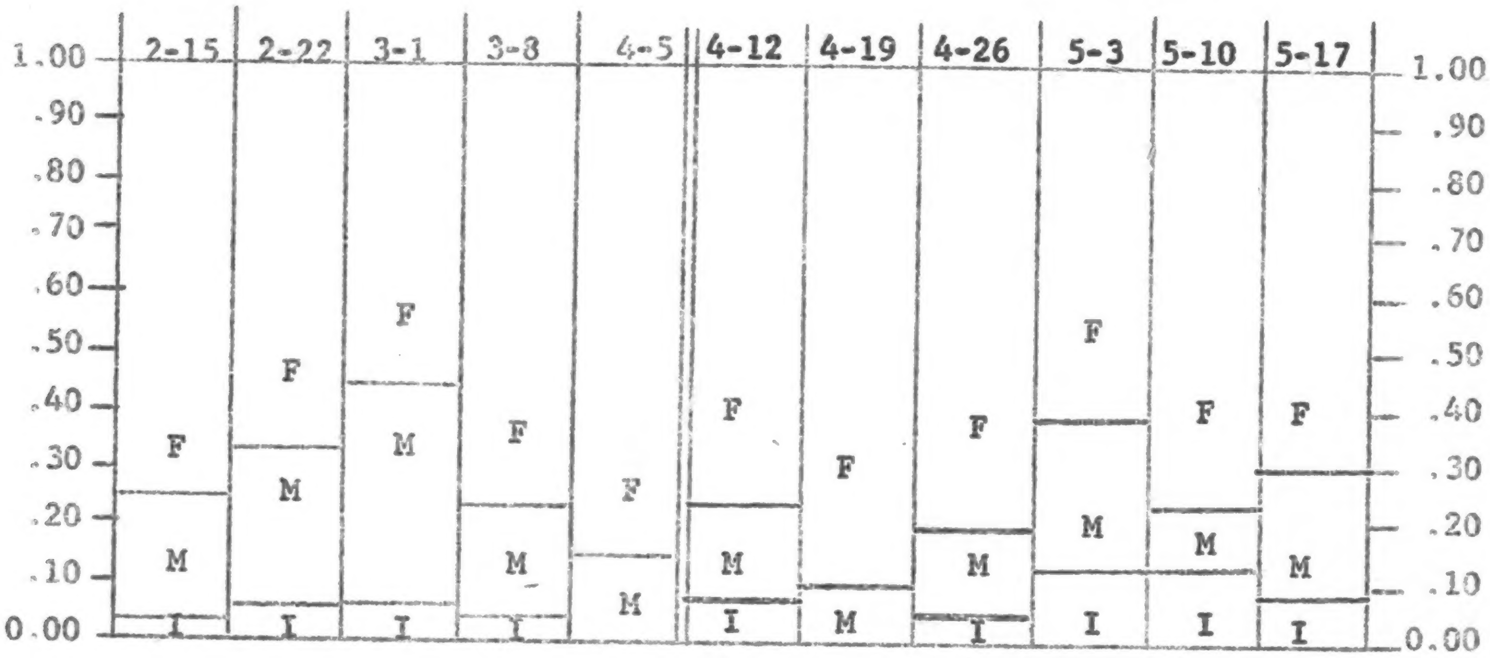
Participation by Summated Frequency Groups

Zonis

Note: f (5>) = 3 pts
m (3-4) = 2
i (2<) = 1
a (abs.) = 0

Name	2-15	2-22	3-1	3-8	4-5	Pts.	Gp.	% Class	% Disc	4-12	4-19	4-26	5-3	5-10	5-17	Pts.	% Disc
Fano, V.	f	f	f	f	f	15				f	a	f	f	f	f	15	
Russell, J.	f	f	m	f	f	14				f	m	f	f	f	f	17	
Miller, D.	f	m	f	f	m	13				f	i	f	m	f	f	15	
Sussman, G.	f	f	f	f	f	15				f	i	f	f	f	f	16	
Just, James	f	f	i	f	m	12				i	a	m	i	i	m	7	
Goldmark, G.	f	i	f	f	a	10	F	.22	.71	m	i	f	i	f	f	13	.73
Mauer, J.	i	m	f	i	i	8				i	i	i	a	i	a	4	
Anderson, C.	i	i	m	m	i	7				i	i	i	f	i	f	10	
Busick, E.	m	f	m	a	a	7				i	i	a	f	a	a	5	
Carlo, J.	f	i	i	i	i	7				i	i	a	m	i	f	8	
Jax, Peter	a	m	m	i	m	7				a	i	i	a	i	i	4	
Jones, James	f	i	i	i	i	7				i	i	a	i	i	i	5	
Zink, W.	i	i	f	i	i	7				i	i	i	m	m	m	9	
Johnson, T.	i	m	i	m	i	7				i	i	m	m	i	i	8	
Strong, C.	i	i	m	i	i	6				i	i	i	i	i	m	7	
Guenette, G.	i	i	m	m	a	6				i	i	m	f	i	i	9	
Marcovici	i	i	i	i	i	5				a	i	i	a	i	i	4	
Thorn, C.	i	i	i	i	i	5				i	a	i	i	a	i	4	
Reid, J.	i	a	f	i	a	5					DROP →						
Harris, A.	i	i	i	i	i	5	M	.52	.25	i	i	i	i	i	i	6	.18
Evans, H.	i	i	i	i	a	4				i	i	i	i	i	i	6	
Stafurik, J.	i	m	i	a	a	4				m	i	i	i	a	m	7	
Coran, J.	i	i	i	a	a	3				i	i	i	i	m	m	8	
Ressler, M.	a	a	i	m	a	3				i	i	a	f	i	a	6	
Thrift, J.	i	i	a	i	a	3				i	i	i	i	a	a	4	
Ostis, H.	i	i	i	a	a	3				i	i	a	m	f	f	10	
Cormier, J.	i	a	a	a	a	1	I	.26	.04		DROP →						.09

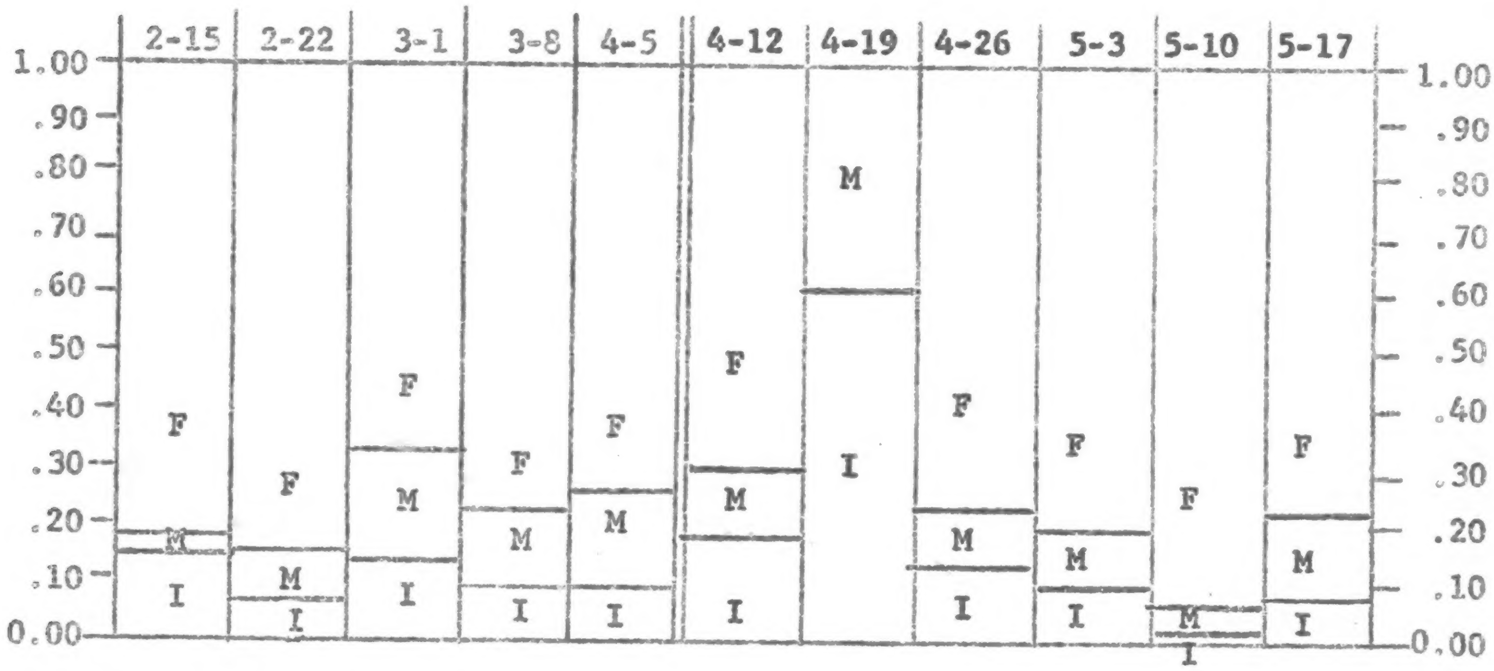
Percentile of Class Discussion by Summated Frequency Groups



Group classification is made on the basis of total assigned points.

For each group: Percentile discussion= $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$

Percentile of Class Participation by Freq.-Mod.-Infreq. Participants



Group classification is made on the basis of each student's individual weekly performance.

For each group: Percentile participation= $\frac{\text{no. of involvements by group}}{\text{total no. of involvements in seminar}}$